Engineering Library

Read the Articles on Stove Selling on Pages 32 to 38 of This Issue.

AMERICAN ARTISAN and Hardware Record

VOL. 84. No. 21. 620 SOUTH MICHIGAN AVENUE, CHICAGO, NOVEMBER 18, 1922. $2.00 Per Year.

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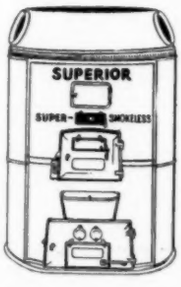

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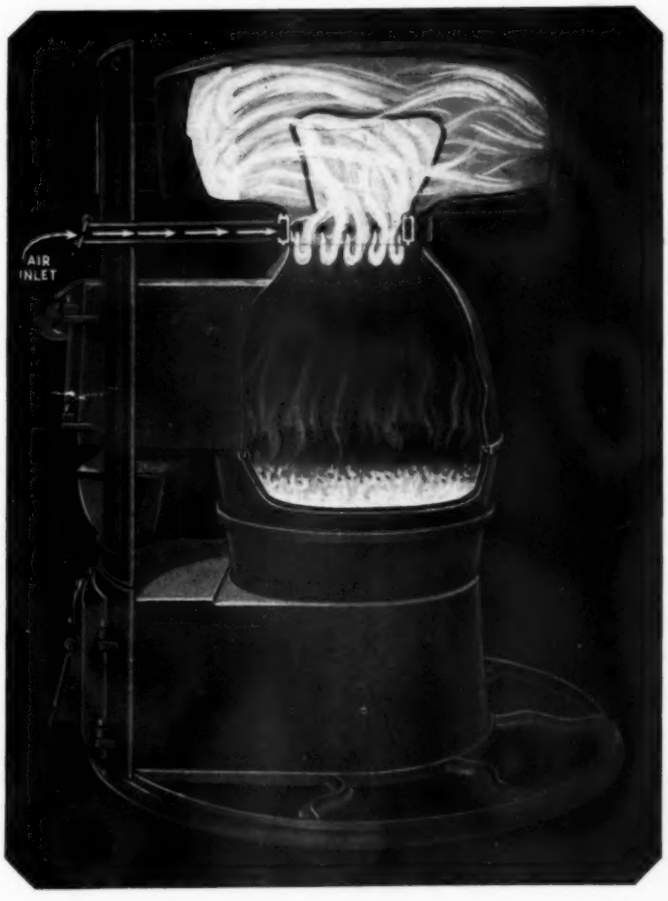
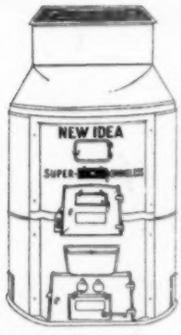


The Super-Smokeless NEW IDEA Pipeless Furnace



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AMERICAN ARTISAN and Hardware Record

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VOL. 84. No. 21. CHICAGO, NOVEMBER 18, 1922. $2.00 Per Year.

NOW FOR BETTER INSTALLATION WORK ON WARM AIR FURNACES

In this week's issue we publish the "Standard Code for Installation of Warm Air Furnaces in Residences," as adopted by the three most important organizations among manufacturers, dealers and installers of warm air heating apparatus.

The work which has just been accomplished is, while of much importance, by no means finished.

The adoption of the Code by the manufacturers was opposed by some who believed that it might injure their business by making the installation so expensive as to make it easier for the steam and hot water men to compete.

On the other hand, some of the installers objected because they felt that there was a danger that the regulations would be too "scientific" for many who, while thoroughly efficient had had little "book learning."

That was also one of the reasons why the suggestion of a provision for licensing installers was voted down. It was thought that many an experienced installer would be unable to pass the technical examination necessary for the obtaining of a license, while men with but little practical experience might pass easily.

The clashing interests compromised and we have now a code which, while not perfect, is so simple and so well based on sound principles that manufacturers and installers alike can well afford to co-operate heartily in making it a real "Standard Code"—one by which an installation can be judged properly as to probable efficiency and safety.

The chief work from now on is to make certain that all new installations are made to conform with the regulations laid down in this Code.

Whether this can best be accomplished in any given community by having a license for installers and by having public inspection, is something which must be decided by the installers in that particular community taking into consideration the possible danger of having their inspection department become a part of the political machine.

It is reasonable to suppose, however, that the individual installer can do more than any outside force to make this Code govern, by advertising the fact that he installs his warm air furnace in accordance with its provisions and that he guarantees satisfaction when allowed to follow these provisions.

In the last analysis, the man who operates the warm air furnace is the man to satisfy and he is the person to convince that the Code means real satisfaction to him.

* * *

It is our opinion that the Code is a decided step forward. Its imperfections can be remedied. Its accepted use will not only be harmonious and helpful to all immediate interests, but will help to educate the public to the dignity and importance of the trade, and is certain to make for better business.

Random Notes and Sketches.

By Sidney Arnold

Dr. John P. Wagner, who spends most of his time in working out plans for the greater success of Success warm air heaters and in his leisure moments attends conventions of furnace men and sheet metal contractors, has no use for people who ask foolish questions just to be talking, and here is a good story that he told to emphasize his point:

One sleeve hung empty, one leg was abbreviated at the knee and on his breast gleamed four medals for bravery in battle. A woman stopped him on the street and inquired patronizingly:

"Did you get your injuries in real action?"

"No'm," he replied promptly. "I was dog robber for the cap'n when we were up in the Argonne. He asked me to clean out his canary's cage and the darned bird bit me."

* * *

Robert Kerr, Secretary of the Clayton & Lambert Manufacturing Company, will sometimes stop in his work of directing salesmen to tell a story, and here is one that he told me the last time I was in Detroit:

Bilkens showed up with a set of hand-carved features that resembled the field after Chateau-Thierry.

"Pete's sake!" gasped a friend. "What happened to your face? Been in accident?"

"Nope," returned Bilkens sadly. "A deaf and dumb barber shaved me and he was feeling chatty."

* * *

Tony Howe likes to attend conventions and always he has a bunch of sheet metal contractors or manufacturers gathered about, for the J. M. & L. A. Osborn Company, of which he is one of guiding spirits, buys and sells a lot of tin plate and galvanized iron.

Recently, when at the Atlantic City hardware convention he heard the following story told, which he though good enough to pass on to me for publishing:

Freddy and Paul were much put out because Marjorie could not play their strenuous games adequately.

"Girls are no acount anyway," exclaimed Paul in disgust. "I never saw such a bunch."

"Oh, I don't know," Freddy countered gallantly. "Girls must be good for something."

"Well, I don't know what it is then," Paul insisted. "If they're good for anything I never heard of it. And anyway, why should you stick up for them?"

"Well," replied the chivalrous Freddy, "we ought to go easy on them. Half of our parents are women."

* * *

Here is one of "Armco" Pierson's latest contributions to the "Society for Abolition of Silence in the Smoking Compartment."

Sam, propelled as if by a Big Bertha, suddenly shot out of the woods in a hilly section of Kentucky and landed at the feet of a pedestrian making his way along the road.

"Thought Ah see'd a bear, suh," he explained apologetically.

"You needn't be afraid of bears, Sam. Bears are extinct around here."

"Yassuh, yassuh. But bears is plumb iggerant animiles and supposin' Ah meets up quick-like with a bear what doesn't know he's extin'—nen what?"

* * *

George Carr, who claims the right to be Sergeant-at-Arms of all the Sheet Metal Auxiliaries, is also known among furnace men and others as a story teller of more than ordinary ability. Here is one of his latest contributions:

Not three months had elapsed since the death of his wife before old Dick Gooch began to take notice of the Widow Tilly. Suddenly, however, the affair broke off for no apparent reason. A friend demanded an explanation.

"We've quit," said Dick tersely.

"How did that happen?"

"Well, by jinks, when a feller asks a woman to marry him and she comes at him with a dipper of hot water to throw over him, and sicks her dawg onto him, and calls him nine different names and threatens to hoss-whip him, he'll take a hint and leave, if he ain't a idjit. Some folks can't take a hint, but I can, by jinks."

* * *

They tell me that Bill Laffin, the T. B. register man who officiates as the "Tramp" at the entertainments for sheet metal contractors at their annual conventions, is figuring up the cost of dining room, kitchen and sleeping furniture with the view of entering into the bond of matrimony.

Maybe that is why he sent me the following:

Mother: "Willie, what do you mean by letting your brother peel the potatoes when I told you to do it?"

Willie: "Well, it's his fault, Ma. He wanted to play soldier, so I did. I'm the top and he's on K. P."

Bill "saw service," you know, with the A. E. F., and no doubt knows the other pleasant duties of kitchen police. Your experience in this line will come in handy, Bill.

* * *

Here is a bit of dialect poetry which contains quite a deal of philosophy and good advice:

Ring True.

Don't be what you ain't,
  Jes' be what you is.
If you is not what you am,
  Then you am not what you is.
If you're just a tadpole,
  Don't try to be a frog;
If you're just the tail,
  Don't try to wag the dog.
You can always pass the plate,
  If you can't exhort and preach,
If you're just a little pebble,
  Don't try to be the beach.
Don't be what you ain't,
  Jes' be what you is.

Standard Code for Furnace Installation as Approved by Manufacturers and Installers.

Complete Text of Standard Code Regulating Installation of Warm Air Furnaces in Residences.

IN THE following we publish the complete text of the "Standard Code Regulating the Installation of Warm Air Furnaces in Residences," which has been approved by the National Warm Air Heating and Ventilating Association, the National Association of Sheet Metal Contractors and the Western Warm Air Furnace and Supply Association:

Outline.

Article 1.—Meaning of Terms.

Article 2.—Provisions in Building.

Section 1.—Construction.

Section 2.—Chimneys.

Article 3.—Formulae.

Article 4.—Installation.

Section 1.—Location of Furnaces.

Section 2.—Foundation.

Section 3.—Setting Furnace.

Section 4.—Casings.

a. Portable.

b. Brick Set.

Section 5.—Basement Pipes.

Section 6.—Wall Stacks.

a. Single.

b. Double.

Section 7.—Registers.

Section 8.—Air Supply.

Section 9.—Smoke Pipe.

Section 10.—Pipeless.

Article Number 1.—Meaning of the Term "Warm Air Furnace Heating Plant."

Warm air furnace heating plants, to which this code refers, shall consist of one or more warm air furnaces, enclosed within casings, together with necessary appurtenances thereto, consisting of warm air pipes and fittings, cold air or recirculating pipes, boxes and fittings, smoke pipes and fittings, registers, borders and face plates, the same being intended for heating buildings in which they may be installed.

Article Number 2.—Provisions to Be Made in Building Under Construction for Reception of Warm Air Furnace Heating Plants.

Section 1. (a) The following provisions shall be made by the owner or building contractor, in any building wherein a warm air heating plant is to be installed.

(b) Where warm air register boxes, heads, pipes or stacks are to be installed, joists shall be set not less than sixteen inches (16″) on centers and shall be butted and not lapped. Studding shall set directly over and under joists, leaving a space of not less than fourteen inches (14″) between studs and joists. Wherever joists are cut, headers must be put in to support joists.

(c) All first story single or subfloors shall be continuous. In all houses having studded exterior walls, these floors shall be extended to the outside sheathing and all spaces between studding shall be closed at the attic line.

Note 1. It is strongly recommended that the attic be tightly floored to reduce heat losses.

(d) All partition walls (or sections of these walls) in which heat stacks to the second floor rooms are to be installed, shall be built of six inch (6″) studding to second story floor joists.

Chimneys.

Section 2. (a) The owner shall provide a chimney for the furnace constructed in a manner to comply with the following specifications.

(b) The chimney must be absolutely smoke tight through its entire length, and must extend at least three feet (3′) above a flat roof or two feet above the ridges of peak roofs.

(c) If built of a single thickness of brick or of cement blocks, it shall be lined throughout its entire length with fire clay flue lining, having not less than three-fourths inch (¾″) thickness. Flue lining to be laid in mortar and made airtight.

(d) The furnace flue must have no other opening for attaching any fireplace, furnace, stove, range, water heater, gas or ventilating connection.

(e) If necessary to offset the flue, it must be done in such a manner as not to reduce the cross sectional area nor create a ledge or obstruction, where loose material may lodge.

(f) Its narrowest dimension shall not be less than eight (8″) inches and no flue smaller than 8″ x 8″ rectangular or eight (8″) inch diameter round will be considered suitable when hard coal is to be burned, or 8″ x 12″ rectangular or ten (10″) inch round for soft coal or wood.

Note 2. It is recommended that the height above the furnace grate be not less than twenty-six (26′) feet.

Note 3. It is strongly recommended that all new chimneys be built in strict accordance with the ordinance recommended by the National Board of Fire Underwriters.

Article Number 3.—Method for Determining Size of Warm Air Pipes, Wall Stacks and Furnaces for Use in a Residence.

Method of Determining Size of Basement Warm Air Pipes.

(Read Explanatory Notes 4 to 11).

Section 1. First Floor Rooms.

Divide square feet of glass by 12.

Divide square feet of net wall by 40.

Divide cubic contents by 800.

Add together the above and multiply by 8.

The result is the area of the basement pipe.

The sum of:

Glass (sq. ft.) (Note 4) ÷ 12,
Net Wall (sq. ft.) (Note 5) ÷ 40,

Cubic Contents ÷ 800 × 8 = Area of Basement Pipe (Note 10).

Section 2. Second Floor Rooms.

Divide square feet or glass by 12.

Divide square feet of net wall by 40.

Divide cubic contents by 800.

Add together the above and multiply by 6.

The result is the area of the basement pipe.

The sum of:

Glass (sq. ft.) (Note 4) ÷ 12, Net Wall (sq. ft.) (Note 5) ÷ 40, Cubic Contents ÷ 800 × 6 = Area of Basement Pipe (Note 10).

Section 3. Third Floor Rooms.

Divide square feet of glass by 12.

Divide square feet of net wall by 40.

Divide cubic contents by 800.

Add together the above and multiply by 5.

The result is the area of the basement pipe.

The sum of:

Glass (sq. ft.) (Note 4) ÷ 12, Net Wall (sq. ft.) (Note 5) ÷ 40, Cubic Contents ÷ 800 × 5 = Area of Basement Pipe (Note 10).

Method of Determining Size of Wall Stacks.

Section 4. First Floor Rooms. Same as Section 1.

Section 5. Second Floor Rooms. Deduct 40% from basement pipe area determined in Section 2.

Section 6. Third Floor Rooms Deduct 40% from basement pipe area determined in Section 3.

Explanatory Notes.

Note 4. In obtaining glass surface use full casement opening. An outside door is figured as glass.

Note 5. To obtain net outside wall multiply height by width and deduct the glass in all windows and outside doors.

No. 6. For rooms having unusual exposure, ordinarily north, northeast and northwest, add 15% to pipe area. For east and west exposure, add 10.%

Note 7. For cold ceilings, add one-half net area of ceiling to net exposed wall (cold ceilings are those next to unfloored attics).

Note 8. Use no warm air pipe less than 8 inches in diameter.

Note 9. It is understood in using the above values for determining basement warm air pipe areas, that these pipes should be run comparatively straight and that they should not be over 10 to 12 feet in length. Sharp turns and long pipes should have extra capacity.

Note 10. These formulae are for 70° inside temperature with zero temperature outside. For a temperature of 10° below zero, add 10% to the capacity of each pipe.

Note 11. The value of 800 (used in cubic contents) is for an estimated air change of one room volume per hour. If it is desired to provide for 1½ room volume use the figure 600. If for 2-room volumes use the figure 400. The factor of 8 in Section 1 will give a register temperature of approximately 190° in zero weather. Should a lower register temperature be desired, the factor 9 will give 175° at the register.

Transition Fittings and Stacks.

Section 7. Transition from warm air pipes to stacks shall be made with a well designed elbow or boot and no stack shall be less than 60% of the warm air pipe area.

Method of Determining Size of Registers.

Section 8. All registers shall have a free area at least equal to the calculated area of the basement pipe.

Method of Determining Size of Furnace.

Section 9. Add together the actual warm air pipe areas in sq. in. as obtained in Sec. 1, 2 and 3, and select a furnace having a free area not less than the sum of all the warm air pipe areas.

Article Number 4.—Installation and Location of Furnace.

Section 1. The location of the furnace shall equalize the length of warm air runs as far as possible, yet give necessary preference to pipes supplying living rooms, dining rooms and main halls.

Foundation.

Section 2. Furnace foundation of brick, cement, or other incombustible material must be provided. Said foundation to extend at least fifteen (15″) inches at rear and sides of furnace casing and at least thirty-six (36″) inches in front of furnace casing. Foundation to be level.

Setting or Assembling of Furnace.

Section 3. (a) The base ring of the furnace shall be cemented to the foundation, making an airtight joint. The furnace parts shall be assembled plumb and level, and in a workmanlike manner.

(b) All sections and joints shall be properly fitted. Joints requiring cement shall be well filled and all bolts shall be drawn up tightly.

Casings.

Section 4. (a) Warm air furnaces shall be enclosed in metal casings or walls of brick, tile or concrete.

(b) Portable. Sheet metal casings including casing tops shall be made of galvanized sheets, not lighter than Number 26-U. S. Standard Gauge. They shall fit the castings and casing rings closely, so as to be dust tight, and shall be securely fastened to the front. The casing shall be lined from the upper casing ring down to a line on a level with the grate.

(c) When side collars are used the casing top must be of sufficient height so that the largest warm air pipe can be taken from side without ovaling. In no case shall a distance less than eight (8″) inches be maintained between the top of any furnace and the top of casing or bonnet.

(d) Any furnace, the casing top of which shall come within sixteen (16″) inches of a combustible floor, ceiling or joist, shall be protected by a metal shield, extending not less than eighteen (18″) inches beyond the casing of said furnace. This shield shall be suspended at least two inches below wood work, allowing free air space between shield and woodwork. No furnace casing or top, coming nearer than six (6″) inches of ceiling or joists shall be allowed in any case.

(e) Openings for side casing collars shall be cut into the casing top, so that the tops of all openings are on a level. Casing collars shall be fitted into place with a proper

flange, or bead on the outside and drawn up on the inside, making a dust tight joint. All collars shall be of same size as the warm air pipes to which they are to be connected.

(f) Brick set, cement or hollow tile casings shall be constructed as follows: Walls shall be not less than eight (8″) inches in thickness, and shall be constructed airtight. Rectangular casing shall be, with least inside dimensions, the same as that of the portable casing of a corresponding size of furnace. Walls shall be carried to the same height as the portable walls, allowing not less than eight (8″) inches between the top of the furnace and the bottom of the top cover. After placing the collars for the warm air pipes, continue the masonry up even with the top of the collars, lay spacing rods of bar iron on edge or angle irons across the furnace top, cover these with sheet iron, cover the sheet iron with masonry and run the side walls four (4″) inches above the masonry bed. A galvanized iron casing bonnet may be used on brick set furnaces.

Provision shall be made in the walls for a manhole to give ingress to heater.

Warm Air Pipes in Basement.

Section 5. (a) All warm air pipes shall be made of bright tin not lighter than IC, or galvanized iron. Side seams shall be locked seams. All joints shall be either double seamed or lapped not less than one and one-quarter (1¼″) inches and such joints shall be beaded and soldered or riveted. All pipes shall be properly secured to ceiling or joist. No solder or riveted joint is required where round pipe slips over the casing collar. Any pipe twelve (12″) inches or greater in diameter shall not be made of material lighter than IX tin or Number 26 U. S. Standard Gauge galvanized iron.

Note 12. It is recommended that all warm air pipes in the basement shall have an upward pitch of not less than one (1″) inch per running foot.

(b) No warm air pipe shall run within one (1″) inch of any woodwork unless such woodwork is covered with asbestos paper and the paper covered with tin or iron.

(c) All warm air pipes in the basement shall be provided with dampers not more than two feet from the casing.

(d) Where warm air pipes pass through a masonry wall, a metal thimble shall be provided, having a diameter at least 1″ greater than the pipe, and pipe supported in such a manner that the air space is uniform on all sides.

Wall Stacks.

Section 6. (a) Single Stacks. All single wall stacks or wall pipes, heads, boots, ells, tees, angles and other connections shall be made of bright tin or galvanized iron and shall be covered with not less than one thickness of 12 lbs. per one hundred (100) square feet of asbestos paper. All studding and other woodwork facing said pipe shall be lined with metal and metal lath used in place of wood lath. An air space of not less than three-eighths (⅜″) of an inch shall be allowed on the two sides nearest the vertical studs. All such pipes shall be braced in a proper manner so as not to obstruct the flow of air but to retain the full capacity throughout. All joints shall be locked and held in place by means of lugs, or straps. No joint shall depend wholly upon solder to make it tight.

(b) Double Stacks. All double wall stacks or wall pipes, heads, boots, ells, tees, angles and other connections shall be made of bright tin, not lighter than IC or galvanized iron and shall be made double, from and including the boot or foot piece in basement to the top of each and every stack and register head on all floors. There shall be continuous uniform air space of not less than five-sixteenths (5/16″) of an inch, which must be maintained between the outer and inner walls of all such pipes and fittings of all kinds, styles and descriptions; such pipes, heads, boots and other fittings to be of the styles, or equal to those accepted by the National Board of Fire Underwriters.

All pipes and fittings either single or double must be secured firmly in place by lugs or straps attached to the outer walls of stacks and fittings, and no nails shall be driven through these stacks or fittings at any point. No wall pipes or fittings shall be used which depend wholly on soldered joints. The various members shall be so made that all joints are locked and soldered and the several members shall be attached to each other with slip joints, which are, for the purpose intended, airtight.

Registers.

Section 7. (a) When baseboard or wall registers are used, they shall be properly and permanently attached to the stack head in such a manner that will prevent any leakage of air betwene the head and the register.

(b) Floor registers shall be provided either with register borders or double register boxes of tin or galvanized iron with an air space of not less than five-sixteenths (5/16″) of an inch between inner and outer boxes.

(c) Registers for warm air and warm air pipes shall not be located in outside walls. The warm air registers in the various rooms shall be located in or near the inside walls in all cases.

Air Supply to Furnace.

Section 8. (a) The air supply to furnace for warm air heating plants may be taken from outside or from within the building or may be taken partially from outside and partially from within. In no case, however, shall air be supplied to any furnace from any basement or furnace room.

(b) The cold air intake or return where air is taken from within the building shall have a net area throughout its entire length of not less than the combined net area of all warm air pipes leading from the furnace. This may be maintained in one or more ducts.

(c) When the cold air supply is taken wholly from the outside of the building the supply duct at its most contracted area must equal or exceed eighty (80%) per cent of the combined area of all warm air pipes leading from the furnace.

(d) Cold air ducts shall be constructed of metal, tile or other incombustible material having smooth inner surface and shall maintain a constant net area throughout their entire length and shall be made airtight. Where a boot or shoe is connected to the casing at the base, the opening shall not extend higher than a line on the level of the grate of the furnace. The width of the shoe shall be of proper measurement to make the area at least equal to that of the round or square pipe to which it is connected.

(e) Wherever the space between joists is used to convey cold air over head, the joists and all wooden surfaces between such joists shall be lined with metal and a sheet metal pan constructed to extend not less than six (6″) inches below said joists. The connection from this pan to the boot or shoe shall be made of galvanized iron not lighter than Number 26 U. S. Standard Gauge, and shall have a transition collar, the top area of which shall be at least 10% greater than the area of the connecting pipe.

(d) The cold air face or faces shall be made of wood, or metal. When set in floors the top of same shall be flush with floor. Where cold air face is placed in a seat or side wall (whether furnished by owner, general contractor or furnace contractor) the open work of face must extend to within at least one (1″) inch of the floor line.

The free area of cold air faces shall be at least 10% in excess of the free area of the duct or ducts to which they are connected.

Note 13. The effective area of a vertical cold air face lies within twelve (12″) inches of the floor line, hence, the capacity of any vertical cold air face shall be determined by multiplying the base line in inches by not to exceed twelve (12″) inches in height and deducting for the grills or cross bars.

Smoke Pipes.

Section 9. (a) The smoke pipe shall be as short and direct as consistent with the location of the furnace. It shall be made of either black or galvanized iron not lighter than Number 24 U. S. Standard Gauge, and of the full size of the collar on the furnace throughout its entire length. It must have no other opening for attaching any fireplace, stove, range, water heater, gas or ventilating connection. It shall be lock seamed or riveted; all joints shall lap not less than one and one-half (1½″) inches and it shall be rigidly secured. Cast iron smoke pipe may be used.

(b) Where the smoke pipe enters the flue, a thimble shall be cemented into the flue and the connections thereto made airtight. Should any smoke pipe come within sixteen (16″) inches of any combustible material, such combustible material must be covered with asbestos paper and a metal shield so fastened that a two-inch air space exists between this shield and the combustible material. This shield shall be no less in size than twice the diameter of the smoke pipe and of sufficient length to cover the wood at all points.

(c) No smoke pipe shall project through any external wall or window.

Pipeless or One Pipe Furnaces.

Section 10. (a) When but one duplex grating is used for both warm air and cold air in a so-called pipeless furnace, the area of the cold air intake shall be at least equal to the area of the warm air outlet of the grating. Article 4, Section 4, relative to casing shall not govern when this type of furnace is installed, but the following specification shall be followed: The inner and outer casing of this type of furnace may be made of either black or galvanized iron not lighter than Number 26 U. S. Standard Gauge. A uniform air space shall be maintained at all points between the inner and outer casing. In no case shall the top of the furnace be allowed closer than twelve (12″) inches to any ceiling or joists above the furnace.

(b) Where joists are cut to accommodate this furnace, headers shall be put in and braced so as not to weaken the structure of the floor above the furnace.

(c) Article Number 3 for determining area of warm air pipe shall not govern in figuring a pipeless furnace.

(d) Where one warm air register face is used and separate face or faces for cold air supply are used, then Article Number 4, Sections 5 and 8 shall apply.

Gilt Edge Manufacturers Promote Representative.

R. J. Schwab and Sons Company, Milwaukee, manufacturers of Gilt Edge furnaces and boilers, announce the appointment of William Gunton of Des Moines, Iowa, as engineer in charge of the Engineering & Service Department of the Gilt Edge factory organization.

Mr. William Gunton, Promoted to Engineer in Charge of the Gilt Edge Factory Organization.

Mr. Gunton has been connected with the Schwab Company for a number of years, and until recently has looked after the Gilt Edge interests in the territory west of the Mississippi River. Mr. Gunton has been a life student of heating engineering. His long study and research work has been coupled with years of practical experience in planning and supervising the installation of heating systems.

Pauley Got Fifty Per Cent Returns in Orders for Warm Air Furnace Work From Letter.

While This Is a Very High Percentage of Replies, Would It Not Be Worth Your While to Try His Plan?

R. E. PAULY, Secretary of the Sheet Metal Contractors' Association and President of the Metal Products Company, Mason City, Iowa, believes in going after business in a manner that leaves a real impression on those whom he considers his prospects—and that means every owner of a home in and near Mason City.

In July he sent out a four-page folder printed in red and black, with a typewritten letter on the first page as follows:

W. S. FARMER,
129 1st. N. W.,
City.

Dear Sir:

August is the month in which to have your heating plant cleaned and put in shape for the winter. We expect to have some men working in your vicinity during that month and would like to take care of your furname while in that neighborhood.

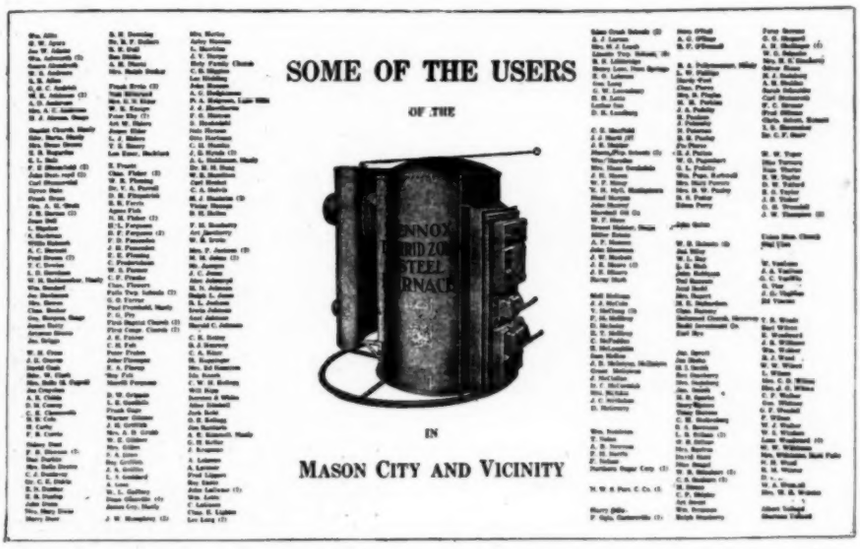
Sign the enclosed card and return to us if you want us to do your work. No charge will be made for inspection where no work is necessary. We employ only efficient workmen and guarantee our work to be satisfactory.

To insure having your work done promptly, return the enclosed card today.

Yours very truly,
METAL PRODUCTS COMPANY.
BY R. E. PAULY.

The card read:

"Please have experienced furnace man inspect furnace in my residence at Number ——, ———— Street, and if necessary clean and put in repair."



Center Pages of Good Folder Advertising Warm Air Furnace Service.

There was space for signature and address, and—very important—the card was a regulation official post card with a one-cent picture of President Jefferson.

The two center pages contained the names of six hundred and sixty seven users of Lennox warm air furnaces who live in Mason City and vicinity. A considerable number of these have bought two and more of these furances, thus indicating that Brother Pauly's shop does good installation work.

The fourth page of the folder showed two letters from satisfied owners of Lennox furnaces, one installed in 1918, and the other in 1909.

The really interesting part of this story is that direct replies—either by the returned cards or by telephone orders—ran up to almost fifty per cent of those circularized.

Mr. Pauly says in his letter to us that he is looking for even better results next year as he will pay closer attention to following up those who fail to reply.

Heating and Ventilating Research Program Announced.

The Advisory Committee and Research Staff of the National Warm Air Heating and Ventilating Association met November 3 at the University of Illinois at Urbana. The committee addressed itself to the formulation of a list of problems to which the Research Staff might give attention as being pertinent ones to the industry. The report of the meeting, as furnished by Secretary Allen W. Williams of the National organization, follows:

(1) Soft coal tests, furnace to have a—straight firepot, b—slotted firepot.

(2) Length of leader, effect on capacity of first, second and third floor pipes.

(3) Pitch of leaders, effect on capacity of pipes.

(4) Boot connections, resistance to flow of air, effect on circulation.

(5) Bonnets, comparison of vertical and sloping sided bonnets and comparison of top and side outlets from bonnets.

(6) Steel furnaces, tests of brick lined tupe for comparative rating.

(7) Different types of cast iron furnaces, tests for comparative ratings.

(8) Booster work—further tests.

Professor Willard discussed this tentative schedule pointing out that some work was in progress and had been completed on each of the items, except item 6, which was agreed that before dismantling the present plant the following schedule of tests should be carried out—

(1) Tests of radiation shield spaced so as to divide equally the free area of the furnace at the top of the firepot. This shield is to be suspended 3″ below the radiator and (at Mr. Langenberg's suggestion) will be tested for two lengths:

a. Bottom hanging 6″ below top of cold air connection.

b. Bottom level with grates and top of cold air connection.

(2) Tests of perforated radiation shield (suggested by Mr. Menk) if results of first tests or radiation should justify.

(3) Tests of 2″ air space in lining of present furnace (suggested by Professor Kratz) to show best spacing between inner and outer casings.

(4) Tests with vertical sided bonnet for comparison with conical bonnet (suggested by Prof. Day). Same with:

a. Side outlet connections.

b. Top outlet connections.

(5) Soft coal tests with:
a. Straight firepot.
b. Slotted firepot.

It was agreed that the firing period should be made to conform to the average four or five hour periods found to exist in household practice the controlling factor being that no holes should be permitted to develop in the fuel bed.

(6) Steel Furnace tests.

In selecting the steel furnace to be used in the Research Work, the names of all of the members making steel furnaces were placed in a hat and from them the name of the Meyer Furnace Company was drawn by a disinterested party at the University.

Your committee inspected the test plant, including the new electrically heated furnace for testing leader slopes and lengths, stack sizes and heights, elbows, boots, etc.

Trade generally is reported as satisfactory in volume and better than might be expected in view of the warm weather.

Yours respectfully,
ALLEN W. WILLIAMS, Secretary.

Canton, Illinois, Furnace Men Use Uniform Estimate Sheet.

The sheet metal contractors at Canton, Illinois, have a good organization of which Eli Byrum, 145 East Elm Street, is secretary.

One of the results of Mr. Byrum's work is the adoption of a uniform estimate sheet for installation of warm air furnaces.

This sheet, which is of the usual letterhead size, 8½ x 11 inches, looks as shown in the accompanying illustration.

FURNACE ESTIMATE

For..... Date.....19....
Used for
Premises at..... No.....

1. No..... Furnace, casing, transportation.....
2. Smoke pipe.....
3. ....8" H. A. runs, complete with floor register.....
4. ....8" H. A. runs, complete with side-wall register.....
5. ....10" H. A. runs, complete with floor register.....
6. ....10" H. A. runs, complete with side-wall register.....
7. ....12" H. A. runs, complete with floor register.....
8. ....12" H. A. runs, complete with side-wall register.....
9. ....12" H. A. runs, complete with double side-wall register.....
10. ....14" H. A. runs, complete with floor register.....
11. ....14" H. A. runs, complete with side-wall register.....
12. ....14" H. A. runs, complete with double side-wall register.....
13. ....Wall stacks, complete with single register.....
14. ....Wall stacks, complete with double register.....
15. ....8" runs; 10" runs, to complete wall stacks.....
16. ....Wall stacks complete off first floor side-walls.....
(If double second floor register, add extra box and register)
17. ....Ceiling register outfits (10 x 12).....
18. ....Extra for special finish registers (do not guess).....
19. ....12". ....14". ....16". ....18" C. A. runs complete.....
20. ....20", ...22", ...24", ...26" C. A. runs complete.....
21. Foundation.....
22. Labor @....c. per hour times.... hours.....
23. Total cost of.....heating system.....
24. Total cost, treated by.....equals selling price.....
25 Terms.....

Estimate Sheet for Warm Air Furnace Installations. Used by Members of the Sheet Metal Contractors' Association of Canton, Illinois.

Walworth Run Foundry Company Offers Fine Line of Registers.

The Walworth Run Foundry Company of Cleveland, Ohio, for twenty years makers of the line of registers which bear their name, has just issued a handsomely engraved and printed booklet bearing prices and descriptive matter of their complete line of semi-steel registers, ventilators, borders, sidewall and baseboard registers, furnace casing rings and specialties. In its introductory the booklet states:

"Walworth registers have stood the test of time and we are building registers under the same design, with many added improvements, as when we started twenty years ago.

"We were first to design and manufacture a baseboard register with a convex removable face. This feature not only affords beauty, but gives the user large capacity which insures a free flow of air.

"Our line of floor registers is made of semi-steel case faces and steel boxes and embraces some of the best features that can be had in register construction. Throughout our entire line we have endeavored to present to the trade a line of registers which embrace strength, durability of finish and simplicity."

Principal features of the registers described include: Style B, with sanitary removable face, designed for first floor use, either strapped or screwed to the wall; Style H, so constructed that the floor can be cut out three inches from wall line to admit a larger supply pipe from the furnace; Style G, designed to be used with a 12 or 14-inch supply pipe, recommended where a large volume of heat is required; Style J, designed for a popular priced register for general or competitive work; Style F, for upper floor work where capacity of riser pipe limits amount of air that can be brought to register, and Style C, deflecting register, convex faced, made to fit above baseboard.

Do Not Scatter Your Debts Among Money Creditors.

Many merchants have failed by reason of having their indebtedness scattered among so many creditors that it gets beyond their control. Scattered purchases result in a large number of small creditors whose bills falling due at about the same time demand so much of the income that there is not enough to go around and unsatisfied creditors rebel and become troublesome. A merchant should not have to meet this embarrassment if he deals with comparatively few creditors—he plans ahead and if he needs accommodation he gets it.

You can't warm a house all winter with one bucketful of coal.

There Ain't No Such Animal as a Hot Air Furnace, Says Turton

Well Known Warm Air Heating Engineer Discusses Impropriety of Using Term of "Hot Air."

Written Especially for AMERICAN ARTISAN AND HARDWARE RECORD by George Washington Turton, Niles, Michigan.

ALL nature is a mimic. The son is created in the image of his father. Growing up in the environment, he takes on similar actions, thoughts, language and dialect. And in olden times it was customary to expect the son to follow dad's profession and methods. In England there are some businesses over two hundred years old handed down from father to son. And I sometimes think that we in our own little heating profession are trying to perpetuate the custom.

Dad, in his younger days, could do the Virginia Reel and the Highland Fling to a nicety and was very popular at "house warmings" and "barn dances." That is no more. The time has passed; and with it the affairs of the day.

Dad could install a furnace as well as any one according to the methods in vogue at that time. He called it a hot air furnace; and that was right. The air that issued from the six, seven and eight inch pipes was nothing else but hot.

There were no interior return pipes. The entire supply was taken through a pipe or trench leading to the outdoors. It was called the cold air pipe. And that was correct; for that was in the days of 40 to 50 degrees below zero, which is entitled to the cognomen, "Cold."

That was also in the days when we knew mighty little, scientifically, about the "hot air" and "cold air" pipes of a "hot air" furnace. Today we know that hot air is not fit to breathe. Mechanical changes have been made to reduce the "hot" air to *"warm"* air. Reflection has shown us that taking "cold air" from the outside is equivalent to trying to heat the whole outdoors. Also that by taking the supply air from inside the coolest temperature is about 60 degrees above instead of 40 below, or 100 degrees saving on the fuel bin.

So through modern education and scientific advancement we have outgrown the hit-and-miss methods and hand-me-down customs of dad's time. We have transformed the "hot air" into *warm* air. We have cut out the "cold air" and instead we have *return* air.

In the language of modern slang, there ain't no such animal as a hot air furnace with hot air and cold air pipes. It sorta gits my Nanny to read these scientific pages and see how them highfaluten' heating engineers still gas about hot air registers, cold air pipes and ceiling ventilators. If a contraption is a register when in the main floor, by what sort of alphabetical contortion does it become a ventilator when placed in the second floor? Old Dan Webster says a ventilator is a foul air duct. How many orders would you get if you told the house owner you could heat his bedrooms by placing foul air ducts in the floor? The same psychological and negative effects are produced by using the terms hot and cold air. Both produce a shudder, and turn a damper on your selling efforts. Let their use pass out as has the methods of their day.

Speak of the warmth from the generous outlet. That's what is demanded. Speak of the adequate supply pipe to furnish this demand. Note the interest and attention of the listener. It's not hypnotism. Just plain, modern salesmanship. Try it.

Courtesy Is as Profitable as Honesty.

The most expensive thing about any store is a discourteous clerk. The highest priced fixture than can be installed in an office is a discourteous "information girl." Courtesy saves time, labor and temper. If courtesy could be made automatic, and could be embodied in a machine, or injected into the veins of people like a vaccine, business men would pay fabulous prices for the machine or the injections. They know that courtesy is as profitable as honesty. Chronic discourtesy is not an ailment that can be treated by precept—the job belongs to the physician, the surgeon or French Lick Springs. Ill health is at the root of chronic discourtesy. Look into the face of the cross, irritable clerk and you will see evidence of internal disorders. The best waiters, agents, clerks and salesmen, are always trained to meet discourtesy with courtesy, and rudeness with politeness. They have found that it pays, and their employers have found that it pays. That is one of the reasons why these employes happen to have these "best" jobs and their employers happen to have these "best" establishments. It is very pleasant to "bawl out" the human pests, but it is costly and does not pay.

Real Man of Business Is Best Exponent of True Principles.

The qualities universally recognized as essential to good business apply to all human affairs—another indication of the universality of business and the divine purpose that every man should be diligent therein. Honesty, thrift, intelligence, prudence, honor, truthfulness, courage, industry, fairness, charity, kindness, brotherhood, patience, promptness, the fulfillment of contracts, the keeping of promises, proper deportment, good habits, courtesy, strength of purpose, ambition to excel, willingness to strive. The list might be lengthened indefinitely, but enough have been mentioned as necessary in business to convince one that the busy man, the man of business, is the only true exponent of what is best in life.

If you would outshine your neighbors, acquire a good reputation and then keep it polished.

Practical Helps and Patterns for the Tinsmith.

Aids to the Improvement of Craftsmanship and Business. News from Various Branches of the Sheet Metal Trade.

Hanging Heating Ducts.

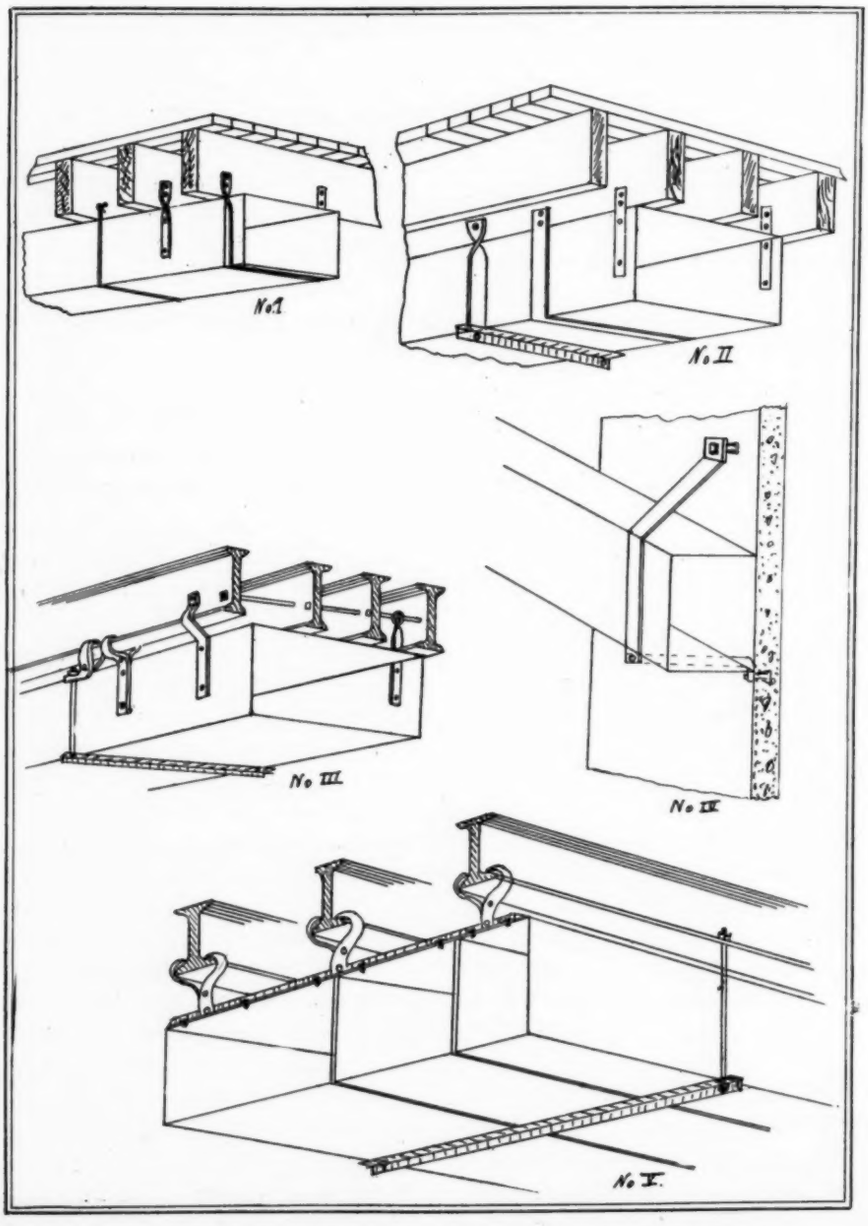
By O. W. Kothe, Principal, St. Louis Technical Institute, St. Louis, Missouri. Written especially for American Artisan and Hardware Record.

The matter of hanging heating ducts is varied and in most cases the method of hanging them is governed by the job, or to what it is possible to hang them to. Where galvanized iron ducts are run beneath floors that have wooden joists, as in Figure 1 or 2, then treatment similar as shown may be used; but care should be taken that a substantial job is made.

In Figure 1 a wire suspended on the joists is sometimes used by some workmen, which may not be so objectionable to very small ducts, but at best it is not a satisfactory practice to follow. It is possible to use wires while hanging to help hold in place and when a duct is set we then apply the more substantial hangers as shown in either Figure 1 or Figure 2.

Then when concrete or I-beams are met with, various treatments as in Figures 3, 4 and 5 may be used. I-beam construction is not so frequent unless it is in factory heating, where the metal ducts must be suspended from structural steel columns, brackets, beams, etc. In that case, a suitable design must be invented to fit in the given place for supporting what is expected of it. Where running ducts along a wall as in Figure 4, a bracket or hanger similar as shown may be used. On extra heavy ducts, a suspending bracket should be placed underneath also to help support the outer edge and prevent the work from sagging at the far corner. Most shops have their own established practices for hanging ducts, and workmen will have to follow them; as it is those already in practice are of such wide acquaintance with the trade, that little need be said about them, nor is it possible to discover new methods of hanging, unless it is applying certain slants to already established practices. When hanging the ducts care must be taken that they are perfectly straight and that they do not sag or bend inward or outward, or that one corner is higher or lower.

This means that the ends must always be cut square and that the cap strips used must be slid on, thus preventing the pipes from telescoping as is often the case, by careless made pipe, when extra pressure is brought to bear they will slip apart.



Various Methods of Hanging Ducts for Warm Air Heating.

Immigration bureau estimates 500,000 foreigners barred from United States during past year by operation of immigration restriction act. Quotas of most foreign countries exhausted, except Russia and Austria.

Martin Proves That Real First Cost of Zinc Is Less Than That of Prepared Roofing.

An Interesting Account of How Digging in Under the Surface Located Real Tales Appeal and Landed Order.

THE so-called "high-power" salesman doesn't just happen. He isn't a factor in his organization because he has mother's eyes. Nine times out of ten he acquires his reputation by sheer resourcefulness and an ability to analyze.

Nor does he ever cease to be a salesman, no matter how high an executive position he ultimately rises to.

Psychology and analysis are just new-fangled names for that good old "Resourcefulness" that we all understand and, as a sparkling example of its effectiveness, we can offer nothing clearer than the following experience of C. W. Martin, President of The American Zinc Products Company:

"On Thursday of last week I was in the center of the corrugated galvanized steel producing area of the United States, and noticed while passing a manufacturing plant there the wooden frame for a building of considerable size being erected. I, of course, immediately called on the company for whom the building was being built in the interest of our Pure Zinc 7/8-inch Deep Corrugated, and found the following condition to exist:

"The company for whom the building was being built had been suddenly faced with the need for more manufacturing space, and had decided to build a temporary building 50 feet wide by 160 feet long, which they estimated they would use for a period of about five years and then replace it with a permanent structure. With this end in view they had endeavored to use the cheapest material obtainable, as first cost was a large item to them, and permanency was not particularly to be striven for. With this end of low first cost, and possible attendant short life in view, they had specified 85 pounds prepared roofing, laid on a solid sheathing of 1 inch by 8 inch pine boards. The company for whom the building was being built did not know what the roof job was costing them per square, having only a total price on the building erected complete ready for occupancy, but after having had the situation as outlined above explained to me, I made the assertion that they could have a Pure Zinc Roof for a lower first cost than that of the roof which they had specified, and that when and if they did wreck the building at the end of five years, the Zinc Roof would have a scrap value of one-third of its first cost, as against a scrap value of *nothing net* for the 85 pound prepared roofing and 1 inch pine sheathing boards.

"Naturally, this proposition sounded good to the president of the owning company, who agreed to give us the business providing our assertion could be proven to be true.

"I then went to the building contractor and told him that I had the owner interested in changing his specification to Pure Zinc, providing the comparative cost figures did not make it prohibitive, told the contractor that if he would come through frankly with all the facts as to the cost of the 85-pound prepared roof, we would in making up our proposition protect him to the extent of a profit on Zinc equal to the profit which he had figured in the 85-pound prepared roof job. He, of course, was bound to be satisfied with the proposition of that kind, and gave me the following figures on the cost to him of the roof for which he had taken the contract, also his item for profit, which gave me the net total cost of the roof to the buyer. These figures follow in detail, and you can digest them for yourselves. However, I took occa-

Cost to Building Owner for 85-Pound Prepared Roof.

1" x 8" Sheathing, F. O. B. Youngstown, per thousand feet	$46.00	
1/8 Waste	5.75	
	$51.75	
Cost of Erecting—45% of $51.75	23.29	
	$75.04	
Contractor's Overhead—10% of $75.04	7.50	
	$82.54	
Cost per square to Building Owner 1/10 of $82.54		$8.254
Prepared 85-Pounds, F. O. B. Youngstown, per Square	$ 2.65	
Cost of applying	.56	
	$ 3.21	
Contractor's 10% of $3.21	.32	
		$ 3.53
Total Cost to Building Owner of 85-Pound Prepared per Square		$11.784

No. 9 Gauge, 7/8" Deep Corrugated Old Chateau Pure Zinc.

Cost to Contractor per square roof area, F. O. B. Youngstown	$8.65½	
Pure Zinc Nails per square	.25	
Contractor's Cost of Erection	.80	
	$9.70½	
Contractor's Spread, Overhead or Profit, 10% of $9.70½	.97	
Total Cost to Building Owner for Pure Zinc 7/8" Corrugated		$10.67½

sion to check him up on the items which he was buying; namely, the 1 inch by 8 inch sheathing boards at $46 per thousand, and the prepared roofing at $2.65 per roll, each roll containing material to lay one square:

"Right here I want to call your attention to the fact that these people were given a very low price on the prepared roofing itself. This grade of material ordinarily sells in ten to fifty square lots at $3 per square, *and it is this low cost per square of material involved which is, I believe, our chief stumbling block, for unless a buyer can be shown thoroughly and beyond a doubt the cost of the additional underlying structure necessary to apply a roof of this kind, he will never know how poor a proposition prepared roofings are, even if figured from a basis of first cost only. You will note that this material, which the buyer thinks he is getting at* $2.65 *per square of covered area, actually costs him, with the cost of the necessary underlying material and the cost of applying the necessary underlying material,* $11.78.

"To further analyze the cost of our own material as applied as to this job, it will be necessary to partially describe the sub-structure itself.

"In this case the building was to be built with frame trusses ten feet apart. On these trusses they were laying 2 inch by 6 inch purlins, 24 inches on centers, their intention being to then sheet solid with 1 inch by 8 inch boards laid on at right angle to the purlins.

"The omission of the 1 inch by 8 inch boards left us the 2 inch by 6 inch purlins on 2 foot centers to start from. This 2 foot center made it possible to use No. 9 Gauge, ⅞ inch deep Corrugated, and as their rafters were 32 feet long, I decided to use sheets 39½ inches wide by 8 feet 4 inches long, giving four 8 foot sheets, with 4 inch lap for each course. To arrive at the cost to the buyer per square I figured as follows:

"Sheet 39½ inches by 100 inches is 27.4 sq. ft. of material area. Each of such sheets would lay 24 sq. ft. of building area, and it would require, therefore, 4.166 sheets per square of building area, or 1.14 squares of material area per square of building area. No. 9 gauge, ⅞ inch deep, weighs 80 pounds per square material area, or 91 pounds per square of building area in this case, which at 9c per pound comes to $8.20.

"As this was a L. C. L. job it was necessary for me to figure into the cost the freight on the crates, which amounts to approximately 10% of the net weight. I had, therefore, 100 pounds gross weight to pay freight on, which in this instance came to 45½ cents, making our material cost the contractor delivered $8.65 per square of building area. The balance of the figures making up the total of $10.67½ are self-explanatory in the other tabulation.

"Of course, this is not a large job, and it took a very busy half day to go through with it, but, believe me, boys, orders for 117 squares of roofing at 9 cents per pound are worth spending the time on.

"These figures as set forth on this particular job will vary somewhat with the character of the job and the details of other contractors' methods of estimating. In the most of the territory where we are soliciting business sheeting lumber will cost more than it was costing this particular contractor; also, in most instances, contractors will not figure less than 25% of waste, nor will they figure cost of erection at 45% of the material bill. The standard figures in this case being 25% for waste and 50% of the material bill for cost of erection. Neither will 8 foot 4 inch sheets always fill the bill. Each job of this kind will have to be figured to fit the circumstances as they exist, but no matter what the details may be as to size or shape of buildings, or a few thousand dollars more or less of sheeting lumber, you have a proposition which will, at 9c per pound, always undersell the prepared roofing fellows and give contractors or dealers a fair profit for handling and give the ultimate buyer a deal which both you and he can be proud of after it is made."

Good Sheet Metal Artisans Wanted in Oakland.

Opportunities for good sheet metal workers are plentiful in Oakland, California, due to a thriving building boom, according to the following letter just received from McDonald & Moore, sheet metal contractors of that city.

"American Artisan & Hardware Record, Chicago, Illinois.

"Gentlemen:

"Enclosed please find usual check for the Artisan which improves greatly with age.

"Do you suppose it possible for you to head some first class sheet metal workers this way? Building is booming here and the sheet metal contractors' association, of whom we are members, are very short of good men, on account of the union keeping down the number of apprentices for a number of years.

"All of the shops are run on the American plan, and there is good opening for new blood from the East, so trust you can head some this way.

"Yours truly,
McDONALD & MOORE,
By H. B. Moore."

Oakland, California.
November 10, 1922.

Gibb Instrument Company Moves to Bay City, Michigan.

The Gibb Instrument Company of Detroit, manufacturers of electric welding equipment, announces the removal of its plant and offices to Bay City, Michigan, effective December 1. The purpose of the move, it is announced, is to provide greatly increased manufacturing facilities to take care of its rapidly increasing business. For the past two years this company has concentrated on the development of automatic and semi-automatic arc, spot and seam welders.

What Animal Trait Is Most Prominent in You, Brother? Asks Greenberg.

Have You a Lion, a Mule, an Owl, a Snake, a Wolf, a Fox, a Bull, a Squirrel in Your Make-up?

Written Especially for AMERICAN ARTISAN AND HARDWARE RECORD by J. C. Greenberg, Cleveland, Ohio.

ONE Sunday afternoon while I was in a small town, I was invited to have dinner with an old customer of mine who was a friend as well as a customer. His little girl, about six years of age, by name of Junie, became interested in me and showed me her animal book. It was one of the regulation nursery books with colored pictures of all sorts of animals. We were having a dandy time, when my customer came out and excusing Junie, who went into the house, smiled and said, "Little Junie is a talkative child, and just loves to talk. I hope she did not bore you."

"Fred," I answered, "it was worth a good deal to me to have had the pleasure of looking through her animal book. She has given me an inspiration that is worth a great big box of candy, and she will get it, too."

I could see Fred get all swelled up on himself. She was an only child and the pride of his life. "What inspiration could Junie give you? She just prattles all day long, and I can't see what she could have inspired you with."

"Let me tell you about it," I said, all smiles. "She showed me her animal book, and explained to me how they all make different noises and imitated all of them cleverly, but that was not the inspiration I was alluding to. The inspiration she gave me was that all human beings represent some kind of an animal. Most of us carry a little animal in our makeup that hinders or makes success."

"I don't just quite get you."

"Here is what I mean, Fred.

"You know a great many people and you have noticed that every one of them has some kind of an animal trait that attracts attention. We sometimes judge our fellow man by the kind of an animal he harbors in his heart."

"I have never quite noticed that," Fred replied with a broad smile.

"Well, I have," I said. "And so have you. Let us just look into Junie's animal book and see what we can see."

Fred brought the animal book out and we both became intensely interested. I pointed to the page which happened to have a picture of a fox on it. "See this fox, Fred?" I asked. "How many men do you know that are so foxy that they are actually losing friends every day? No one likes a 'foxy' person. They are so sly and flattering and deceitful that we dislike them. We put them down as 'foxy' and are careful in our dealings with them."

Fred smiled and shook his head in agreement.

"Here on this page we see a pig," I went on. "There are lots of pigs in the human family. The kind that want to hog up everything in sight. They get their paws in the trough and won't let anybody else near it. I allude here to the business hog, Fred. Isn't that so?"

Fred still smiled.

"Here we have a snake," I went on. "Do you know of anybody that is treacherous as a snake? That kind of a person that will sting and hiss and spit human snakiness? There are some people just like this. You may feed them, help them and advise them, but in the end you get stung. They are snakes—human snakes."

Fred still smiled.

"Just look at this Wolf, Fred," I said. "Do you know that man who is always as hungry as a wolf. He is always hungry for business. He will show his teeth every time he has a chance. He will howl at a distance without the courage to come out into the open alone. He is the human wolf. He will promise to behave, and will agree to be ethical, but the moment your back is turned, the wolf acts. He is wolfish in his heart."

At this point Fred laughed out loud but said nothing.

"Here is a mule, Fred," I went on. "You know of some people that are as stubborn as mules. They will not listen to reason or logic, but will just remain stubborn and that is all. Such people have mules in their hearts."

"By golly that is so. I know at least one person that will tally so far," Fred spoke up.

"Here is a Jackass," I pointed out. "The jackass is the low brow of the animal world I believe. There are many human low brows that are as foolish as a jackass. They are all ears, but have no understanding. They belong to the jackass tribe, Fred, and nothing on earth will ever cure them."

"Right you are," Fred assented.

"Here is a bird called an owl. You know the human owl. The wise kind, who knows everything and can't see daylight. The human owl who always says, 'I told you so.' That irritating kind of human who knows more about government and religion and business than any other man. The wise owl of a man is certainly a subject for taxation."

Fred nodded his head in agreement.

"Here is a bull, Fred," I said. "You know that bullheaded kind that are never satisfied, unless they can bully others in an argument or a fight. The human bull is no use to himself or anybody else, and we do not like them. They belong in a stall with a ring in their nose."

Again Fred laughed.

"Here is the monkey," I went on. "That human monkey who imitates everything he sees, but never gets ahead. That monkey who will always follow but will not lead. You know that kind, Fred?"

"Now, there are many animals that really fit the human being and make for progress. If a business man could be as brave as a lion, as

faithful as a dog, as tender as a dove, as gentle as a cow, as steady as a horse, as diligent as a beaver, as ambitious as an elephant, as quick as a tiger, as observing as a squirrel and as willing as a pointer, we would be better off and success would be more prevalent."

At this point, Junie came out to claim her animal book, and we came back to earth again.

The man who wrote the animal book, wrote better than he knew.

All around us lie sermons that teach us real life. The silent sermons of children teach the grown-ups how to conduct human activity. What do you think about it, brother? It is true, isn't it?

This is why Junie received a box of candy.

St. Louis Sheet Metal Body Lists Associate Members.

A novel way of living up to its slogan—"Cooperation Advances Trade Interests"—and at the same time providing a service mutual to the interests of all its members, has been demonstrated by the Sheet Metal Consumers Protective Association of St. Louis.

The service consisted of printing and distributing to its members a list of the thirteen manufacturers, who are associate members, on a small placard, suitable for fixing, with a thumb tack, at some place convenient to the telephone. The placard gives the firm's telephone numbers for both telephone systems, and at the bottom is this timely reminder:

"The Association meets regularly the second Tuesday of each month, 8 p. m., 4001 Olive street, Architects Club.

Michigan Sheet Metal Men Plan Annual Convention Book.

Delegates and visitors to the annual convention of the Michigan Sheet Metal and Roofing Contractors' Association, which will be held in Bay City, February 26, 27, 28 and March 1, 1923, will be greeted by an annual program book of much more snap and dash than usual, according to announcement by Secretary F. E. Ederle.

The announcement states that the organization has obtained the services of N. L. ("Armco") Pierson, Jr., and Hugh E. Doherty. Mr. Pierson will make cartoons and Mr. Doherty will furnish the lyrics to accompany them. These cartoons will be distributed throughout the book in such a manner as to attract the attention of all readers to every page, thereby giving increased value to the advertisers.

Stock of Slab Zinc Is Steadily Diminishing.

The following table shows how the stock of zinc in slabs has steadily grown smaller since January 1, 1922, in spite of steadily increasing production, thus showing that the use of zinc is growing at a good rate.

1922	On Hand 1st of month	Produced during month	Total for month	Shipped during month	On Hand end of month	Decrease
January	66,608	23,706	90,314	24,636	65,678	930
February	65,678	22,513	88,191	24,067	64,124	1,554
March	64,124	26,532	90,656	30,394	60,262	3,862
April	60,262	25,506	85,768	34,040	51,728	8,534
May	51,728	27,419	79,147	38,738	40,409	11,319
June	40,409	28,547	68,956	39,380	29,576	10,833
July	29,576	31,917	61,493	32,875	28,618	958
August	28,618	31,423	60,041	38,412	21,629	6,989
September	21,629	33,134	54,763	35,957	18,806	2,823
		250,697		298,499		

It will be noted that the production per month grew from 23,706 tons in January to 33,134 tons in September, an increase in production of nearly fifty per cent, and yet every month showed that the stock on hand grew less, until at the end of September there were only 18,806 tons on hand, as against 66,608 tons on January first.

A lot of us often think what a fine thing it would be if we had a strangle hold on all of the business of our particular line in the country. But every business needs competition, a class of competition that will force it to greater and better efforts.

U. S. Training Ex-Veterans in Sheet Metal Work.

In an announcement of its new rehabilitation program, just issued, the U. S. Veterans Bureau asks the business men of the nation to establish contact with the Bureau and arrange to employ ex-service men, who have completed their training, and furnishes a three-fold purpose: to help the ex-soldiers, to help the government and to help the employer.

Of 101,000 disabled veterans being rehabilitated, it is stated, over one-third are receiving trade and industrial training, in established schools, training schools and the like, while the opening of the vocational schools at Chillicothe, Ohio, wholly under the government's direction and training, marks the latest departure in the program. In addition to agriculture the following trades are being taught at this government vocational school:

Auto mechanics, carpentry and frame building, cabinet making, upholstery and body work on automobiles, electrical work including general interior and exterior wiring and armature winding, plumbing, sheet metal work, sign painting, shoe repairing, tailoring, laundrying, typewriter repairing, baking, cooking and nursing (male), general mechanics, machine shop work, drafting and vulcanizing. Classes are in operation in all of the above subjects under competent instructors with all modern facilities and apparatuses for instruction in those lines of work.

The men who graduate from this school must pass satisfactory tests and must demonstrate their ability to carry on in their chosen vocation before the government will allow them to accept employment. They will have not only the theoretical training necessary to their particular vocation, but they will also receive practical work and some experience on the job before they are declared rehabilitated.

The government has provided the methods and funds needed in the rehabilitation program; the vocational handicapped veterans are availing themselves of this opportunity of re-education; commerce, agriculture, industries and the professions are being asked to assist in this plan of salvaging the human wastage of war. The cooperation of the nation's employing bodies are vital factors in the ultimate success of the undertaking.

Employers who can offer employment to these rehabilitated men, or who desire information of men trained in the various trades, should write to Col. Charles R. Forbes, Director, U. S. Veterans Bureau, Washington, D. C., or Employment section, U. S. Veterans Bureau, 110 Canal street, Chicago. Director Forbes declares:

"It is necessary for the American employer to be a partner in this enterprise. The cost of rehabilitation is going to increase if the men are not quickly placed in employment after their training is finished. These well-trained men are ready to compete with their fellow-workers on their merits alone. They ask equal pay for equal work. A comparatively small number have amputations that are serious and even these cases receive such training that the amputation does not affect their efficiency."

Zinc Is Easy to Handle If You Only Learn How.

It is estimated by W. V. Elliott, of the George W. Badger Company, manufacturers of church, theatre and residence organ pipes, Rockville Centre, New York, that 75 per cent of the metal in a pipe organ is sheet zinc.

Zinc is preferred for organ pipes because it is practically non-vibrant and this quality has led to its use in other musical instruments.

This company possesses unusual facilities for fabricating sheet zinc, especially where exact soldering is absolutely necessary.

The work done by the sheet metal workers in this plant, dealing largely with zinc, shows that the sheet metal worker who falls down in the bending or soldering of sheet zinc has himself largely to blame.

Rustless Iron Found by British Experiment.

There has been developed recently in England a "rustless iron," according to the Department of Commerce. This material is iron to which a certain proportion of chromium has been added. A simliar alloy called "stainless steel" has for some time been familiar to metallurgists. Stainless steel differs from rustless iron chiefly in that it contains small amounts of carbon.

In order to produce rustless iron, an iron chromium alloy free from carbon, it is necessary that carbon free iron and chromium be available. The usual forms of chromium, commercial grades of ferro chromium, contain comparatively large amounts of carbon. The discovery of rustless iron has thus made it very important to be able to treat ferro chromium by some process which will remove the carbon. Among the methods proposed is that of heating ferro chromium in contact with hydrogen.

Through experiments conducted by the Bureau of Standards of the Department of Commerce, it has been found that ferro chromium heated in hydrogen loses carbon slowly at temperatures below the melting point of the alloy. When hydrogen is bubbled through molten ferro chromium the loss in carbon is very rapid. It may be possible to prepare low carbon ferro chromium by blowing hydrogen gas through molten ferro chromium in a converter of the type used in the manufacture of Bessemer steel.

Find Copper Water Pipe 5,400 Years Old.

A piece of copper, 5,400 years old has been received in New York City by the Copper & Brass Research Association from William Coffin, American Consul General, at Berlin. So far as is known, this is one of the oldest pieces of copper in existence. The specimen was cut from a copper pipe found in some excavations at Ghizeh, Egypt, near the tomb of the Egyptian King Sahoure. The pipe is three feet six inches long and about 3½ inches in diameter. The bulletin of the association says: "This piece of copper pipe most likely served to conduct water to the palace of ancient Egyptian rulers."

Notes and Queries

Copper Tubing.

From McCoy and Son, 737 Fifteenth Avenue, East Moline, Illinois.

Kindly inform me where we may obtain copper tubing 1 or 1¼ inches coiled to about 14 or 16 inches in diameter, in lengths of 18 or 20 feet.

Ans.—American Brass Company, Kenosha, Wisconsin; Dallas Brass and Copper Company, 820 Orleans Street, Chicago, Illinois; and U. T. Hungerford Brass and Copper Company, 80 Lafayette Street, New York City.

Jet Cock Flanges for Radiators.

From L. R. Hamman, 347 East Main Street, Decatur, Illinois.

Please advise me where I can get jet cock flanges for radiators, in one-eighth and one-quarter inch sizes.

Ans.—Faber-Schneider Radiator Company, 2317-19 South Wabash Avenue, Chicago, Illinois.

Address of United States Radiator Corporation.

From Hugo Wegener, Marshfield, Wisconsin.

I should like to know where the United States Radiator Corporation is located.

Ans.—133 East Grand River Avenue, Detroit, Michigan.

Can Range Demonstration Sales Be Made Successful in the Middle of Winter?

Experience Proves That When Properly Planned Mid-Winter Demonstrations Bring Good Results.

FOR some reason—or most likely no reason at all—many hardware merchants who sell stoves and ranges quit making any effort to find new customers for these goods as soon as November is past, and their stove departments are dead until some time in the spring when for a few weeks they will again be fairly active—

With the natural result that their stove business amounts to a comparatively small proportion of their total sales and yields a far smaller profit on the investment than it ought to and than is possible with proper effort and push.

To say that stoves—and ranges in particular—cannot be sold in numbers large enough to justify any special effort during the winter months is simply to take an arbitrary position for which there is no basis if we are to judge from the experiences of others—and on what else is judgment to be formed?

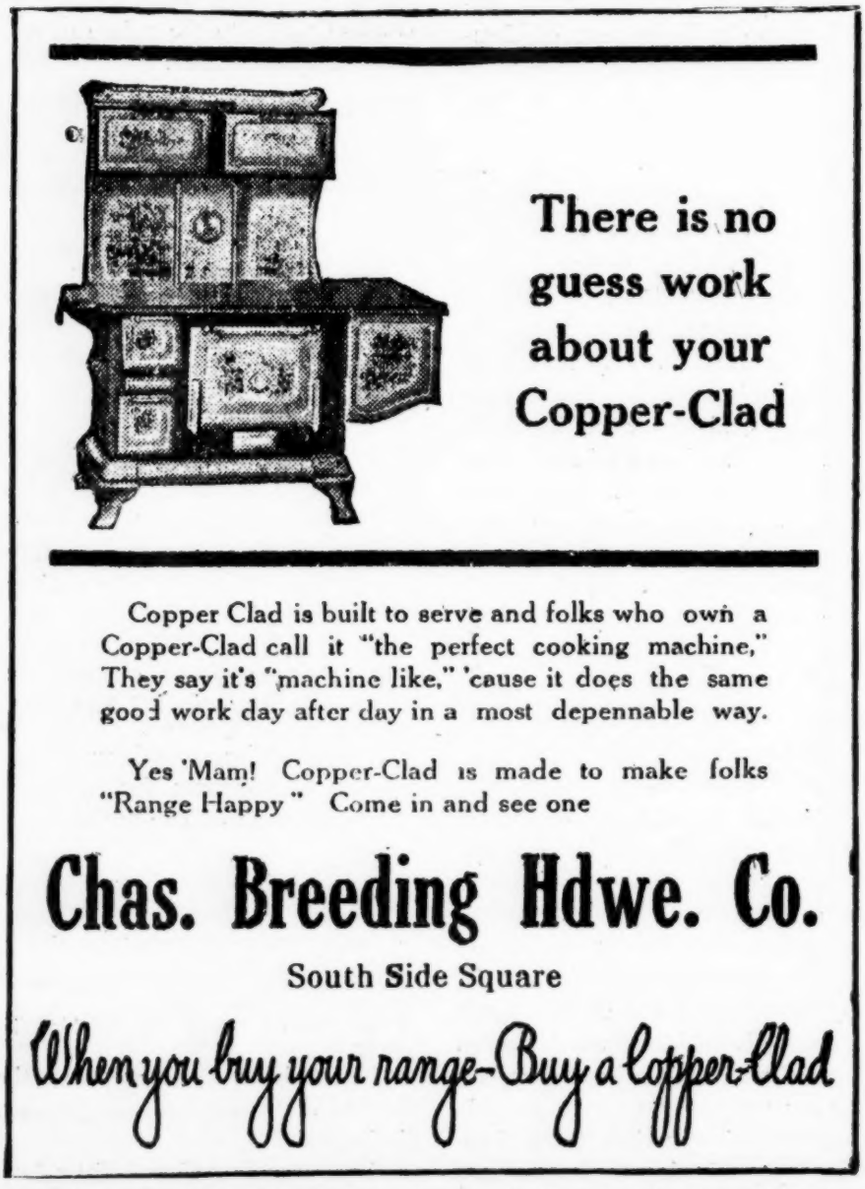

There is no guess work about your Copper-Clad
Copper Clad is built to serve and folks who own a Copper-Clad call it "the perfect cooking machine," They say it's "machine like," 'cause it does the same good work day after day in a most depennable way.
Yes 'Mam! Copper-Clad is made to make folks "Range Happy" Come in and see one
Chas. Breeding Hdwe. Co.
South Side Square
When you buy your range-Buy a Copper-Clad

Figure 1.—Service and Satisfaction Are Emphasized in This Advertisement.

The Whitestown Hardware Company, Whitestown, Indiana, sold in one week in December, 1920, eighteen Copper Clad malleable ranges.

The Grote-Rankin Company, Seattle, Washington, sold one hundred and four Monarch malleable ranges in one week in February, 1921.

Whitestown is a village of less than six hundred people, and Lebanon, a city of 8,500 inhabitants, is only eight miles distant, so that under ordinary circumstances Mr. Harting, the stove merchant in question, would not be considered as having much of a territory to draw trade from—and yet, he sold in one week in December eighteen ranges which amounted to almost three thousand dollars!

Seattle is a manufacturing city and a great seaport with over 400,000 inhabitants. Here the same sort of aggressiveness but among an entirely different sort of people produced sales of over ten thousand dollars worth of ranges in one week.

In both places conditions were supposed to be unsatisfactory. The Indiana farmers were hard up because prices on corn and other farm products were entirely too low in comparison with the prices that were asked for manufactured goods.

In Seattle thousands of people were out of work and those who were employed had had their wages and salaries slashed.

And yet—in both places, in the middle of the winter—big results were accomplished!

What was the reason?

Simply this—that those who were in charge of these two stores refused to admit to themselves that "there was no use in spending money and effort in trying to induce people to buy, because they had no money to spend."

And the results of their efforts proved that they were right:

There were enough people who had money with which to buy the ranges they offered for sale to make their demonstration sales a big success in both instances.

This was in the season of 1920-21 when "everybody"—what a misnomer that word sometimes is—thought that business was dead.

What about this season of 1922-23, when things are on the upgrade, when people are buying freely, when employment is getting to be almost 100 per cent, when people have money to spend, when prices of manufactured products compare more favorably with wages and with prices of farm products?

Are you going to say to yourself on the day after Thanksgiving that the stove selling season is over and that between December first and, say, March 15th, it will be more or less an accident if you sell a range?

Or, are you going to make a real, a determined effort to demonstrate to yourself that your old notion was wrong and that you can really sell ranges in December, in January and in February?

Read what Mr. Harting, of the Whitestown Hardware Company, said about his sale of eighteen ranges in December:

"How did we sell those eighteen ranges during the first week of December?

"By going after business with just a bit of extra effort.

"We advertised that we would have during that week an expert from the factory, to demonstrate and explain all the various exclusive features of our ranges, and that it was to the interest of anybody who was at all considering the matter of purchasing a range within a year or so, to come in and find out about our ranges.

"On the first day we did not try to sell any at all, as we wanted the people to feel perfectly free to come and go, but we did make a note of those who appeared to be more than ordinarily interested, and the following days we had two of our salesmen make personal calls on them at their homes, with the result that our sales for the week totaled eighteen ranges.

"Of course, we sold ranges all during the fall, and the only reason why we did so well—nearly two carloads—that I can think of, is that we talked ranges instead of worrying about the low price of corn.

"You know, once when you get your prospect to think more of the comfort and the service she will secure by the possession of the range you want to sell, than of the particular period or condition under

CREDIT
Bridging the Gap
Credit is the foundation of all success. Without credit most of our largest enterprises could not exist. Why not open an account with us this week? Any article in this advertisement delivered on payment of One Dollar.
POINTER
All cast iron range like cut; excellent baker, and a stove that operates with very little fuel. Price $60.00
Delivered on payment of $1.00 down
Good heavy oak heater, like cut, excellent heater. Keeps fire good; 15 size. Price $23.50
Delivered on payment of $1.00
oil heater, just the thing for these cool nights..... $8.00
Delivered on payment of $1.00
3 burner gas stove like cut for..... $24.00
Delivered on payment of $1.00
C. E. HUDGIN

Figure 2.—Short Descriptions and Definite Prices Make This an Efficient Advertisement.

which you may be trying to make the sale, the price is of far less consideration to her than many people think.

"I talk 'service' and 'satisfaction' rather than mere 'quality,' because I feel that too often a 'quality' argument is too likely to make the prospect think the quality must necessarily imply a higher price than she may want to pay."

We are inclined to agree with Mr. Harting on the latter proposition, and we know that his method is selling ranges right now.

Demonstrations can be made successful in mid-winter just as well as at any other time.

The only requisite is that you have the ranges and make a well planned effort to get your people to come to your store.

Newspaper or Circular Advertising Properly Executed Will Sell Stoves.

Make Use of Manufacturers' Helps in Preparing Your Copy and Use Cuts Always.

THE man who says that advertising is of no use to him in his business must be engaged in some sort of business that cannot stand the light of publicity.

And the statement itself is untrue—absolutely.

There is no business of a legitimate nature that cannot be improved, that cannot be increased profitably by the judicious use of advertising.

It makes no difference where the enterprise is located—advertising, carefully planned and executed, will add to the number of customers, increase the average total sales to each customer and the net profit.

Combinations Come And Go.
The New
QUICK MEAL
Is Here to Stay.
Because--
It has two ovens and the "Lorain" heat regulator on the gas oven.
It will do all the tricks in cooking and, being fully enameled will give the high class service consistent with "Quick Meal" reputation.
Henson Robinson Co.
THE STOVE STORE
NORTH FIFTH

Figure 3.—A Good Advertisement, But the Wrong Cut Is Used.

Suppose you are located in a small town without even a small weekly with its very limited circulation.

How can you advertise in such a place?

Somewhere nearby there is a printing plant where a newspaper is published that "covers" your territory. You can, no doubt, arrange to have your advertisement inserted at a special rate, or if this is not possible, then you can have circulars printed and mailed out to your own mailing list.

And if you live in a large city and do only a "local" business, the same holds good.

There will be a neighborhood newspaper the publishers of which will be glad to carry your advertisement, or you can have "dodgers" printed for distribution by messengers to the homes in your territory.

Again—no matter where you do business there will be some way of carrying your message into the homes of your prospective customers, and unless you take advantage of that opportunity you will be losing sales enough to make your neglect a very costly one.

We show on these pages a number of retail stove advertisements which may well be studied carefully.

Some of them are excellent examples of good stove and range advertising. Others are lacking in some respects. But the important fact is that these advertisements come from stove merchants in large and small cities, some of them even having to advertise in papers published in other towns.

Figure 1 shows a two-column advertisement, six inches deep, published by the Charles Breeding Hardware Company, Winterset, Iowa.

Note the appeal on the basis of service and dependability. The printer made a mistake in the spelling of one word. See if you can find the error. Copper Clad malleable ranges are featured.

In Figure 2, C. E. Hudgin, an installment dealer in Jacksonville, Illinois, has an advertisement, three

columns wide and eleven inches deep, in which he offers four distinct types of heating and cooking stoves for sale.

First, there is a cast iron coal range—the Pointer—quoted at a specific price. Then there is the "Oak" heater, also at a definite price. An oil heater and a gas stove, both with prices quoted and short descriptions, complete this advertisement.

That is what you may class as specific advertising and results are easier to trace on that sort.

Figure 3 shows a two-column advertisement, five inches deep, of the Quick Meal combination range. It was published in the Springfield (Illinois) *Journal* by the Henson-Robinson Company, a hardware concern which is known from Cairo to Chicago and from Quincy to Danville, but the management of which still deems it wise to spend money for advertising its wares.

In Figure 4 W. A. Boss, stove merchant in the small town of Ellsworth, Michigan, had a two-column advertisement, five inches deep,

STOVES

That Heat Well and Are Fuel Savers

The heating question is a problem these days, but we believe we have solved it stocking up with a good line of stoves, both heating and ranges.

INDEPENDENT STOVE CO. RANGES
NATIONAL RANGES
NATIONAL WOOD AND COAL HEATERS

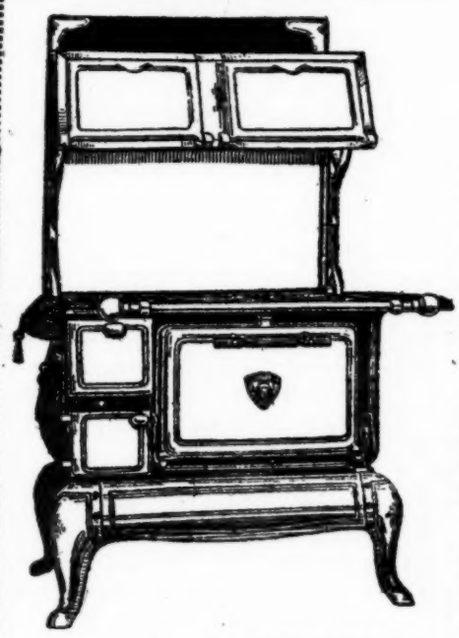
All good makes, fuel savers and the kind that give the best of satisfaction.

New line of Horse Blankets, both square and stable, just received.

W. A. BOSS

ELLSWORTH, MICHIGAN

Figure 4.—Heat Producing and Fuel Saving Qualities Are Featured Here.



RANGES

Built on honest principles of the best quality pig iron, by skilled workmen. Features:—Duplex Grates for coal or wood; non breakable oven door spring; copper reservoir; high closet and oven door parcel iron with nickle trim. Stove top, six lids, malleable with polished surface. Stoves of quality at a great savings in price.

Extra ordinary values in heaters. We have the servicable stoves at the lowest price.

LOVING'S STORE

Phone 166 **South Side** □

Figure 5.—A Good Illustration, but Not Enough Human Interest in Copy.

which was inserted in the *Charlevoix Courier*.

Mr. Boss tells his people that he is prepared to serve their needs in both heating and cooking stoves and mentions the Independent and the National makes. He puts emphasis on their fuel saving and heat producing qualities. No prices are quoted.

Figure 5 shows a two-column, four and one-half inch advertisement in which "ranges" are advertised. No name is given of the ranges, nor is any price quoted. This advertisement of Loving's Store in the Effingham (Illinois) *Record* would have been more effective if a price had been cited. The display is good, but the description sounds too much like a factory catalogue.

Figure 6 shows a three-column, eight-inch advertisement published by Wolff, Kubly & Hirsig Company in the Madison (Wisconsin) *Journal*. Clark Jewel gas ranges

Wolff, Kubly & Hirsig Co.
MADISON'S LEADING HARDWARE STORE
The Clark Jewel Gas Stove
Six excellent reasons why it will pay you to by the Clark Jewel:
Durability—Each and every Clark Jewel stove is scientifically built to give years and years of service
Sanitation—Every part fits snugly in its place doing away with dirt collecting corners and cracks.
Convenience—These stoves are built with hard white enamel burner tray and splasher walls. Can be washed as easily as a plate. The Lorain is also included on many of these stoves.
Reliability—The American Stove Works having built kerosene, gasoline and gas stoves for 45 years should convince you that the Clark Jewel Gas Stove is the logical stove to buy.
ELECTRIC HEATERS
Just the thing for chilly corners, bath room and early morning use—several different makes in stock. Come in and choose the you need now.
Oil Heaters
For the person who has no electricity in the home or who prefers an oil heater the is the heater to buy because it is clean and economical.
$6.25 up
Come In and Look Them Over
$36.50 to $125
HEATING STOVES
The Heater is one of the best known and best liked heating stoves on the market. You'll fine the a convenient and economical stove to operate also.
Come in and let us explain its many superior features
King Oak Heaters
The practical stove for the office or small rooms. Substantial enough to be worth more than what we are charging for them.
Come in and see them
$25 and less
WE GIVE 3 PER CENT DISCOUNT FOR CASH

Figure 6.—Good Display and Prices Make This a Sample of Good Advertising.

with Lorain Heat Regulators are advertised, and mention is also made of electric heaters, oil stoves and coal heating stoves. On some of these a range of prices is quoted. Note the "$25.00 or less" and also "We give 3 per cent discount for cash."

In Figure 7 Max Fishman, Clinton, Indiana, advertises the Brilliant Pointer range. A single column six-inch space is used to good advantage, but we believe that it would have been strengthened by having the price quoted.

Figure 8 is a reproduction of a striking three-column, eight-inch advertisement of Hoosier stoves, published by the Home Furniture Company in the Huntington (Indiana) *Press*. The person who needs a heating stove is certain to be impressed by this good looking advertisement.

Figure 9 shows a two-column advertisement, eight inches deep, which was published by F. M. Jaeger Hardware Company, Dubuque, Iowa.

This advertisement features the twin-oven Paramount malleable combination range.

In many cities the combination range is finding an increasing number of friends because of its adaptability to conditions, and the Jaeger Hardware Company is emphasizing the desirable two-oven feature in a very effective manner.

Forshaw Stove Company to Erect Six-Story Building.

The Forshaw Stove Company of St. Louis, which for forty years has occupied its present quarters on Twelfth street, between Pine and Chestnut streets, has purchased adjacent property and will erect a six-story building on the premises. Twelfth street is now recognized as the heart of the St. Louis business district, and the projected erection will give the Forshaw Company a fine, modern building with exceptionally advantageous location.

At $1500 a foot the additional frontage cost $78,000. The ground, with a 52-foot frontage on Twelfth street, has a depth of 100 feet. Present improvements consist of two buildings, one of which is occupied by the Forshaw Company, and the other by a tenant whose lease expires in three months, at which time the construction of the new building will begin.

Range Satisfaction:
POINTER
BRILLIANT
POINTER
We can give you a real pointer about ranges — and here it is: THE POINTER RANGE. Medium in price, it fills your requirements to a T. Good looking, economical in use of fuel, an excellent baker and built of material that is destined to last.
We firmly believe you'll thank us for giving you this pointer on cooking stoves—come in and examine the POINTER.
Max Fishman
316-318-320 South Main St.

Figure 7.—Sample of Good Advertising in Small Space.

Same Merchandising Ideas that Sell Phonographs and Sewing Machines, If Applied, Will Sell Stoves

Sales Manager for Manufacturer Gives Go-After-'Em Suggestions Which Will Turn Over Stock

INSTEAD of concentrating selling abilities exclusively to the opportunity of equipping the farmers with labor-saving devices, the same sales energy also directed toward the kitchen equipment would result in doubling the sales of ranges. The kitchen range is easily the most important single article in the household—kitchen cabinets, sewing machines, phonographs to the contrary notwithstanding.

Every time the county clerk issues a marriage license there is created a stove prospect. The couple may never own an automobile, may never possess a phonograph and may never need a baby carriage—but some time or other, as sure as fate, they're going to be in the market for a stove.

There are many desirable forms of advertising, and many of them can be employed at little or no cost. Envelope inclosures, package inclosures, word-of-mouth, road signs, window displays, etc., are forms of advertising and often the cheapest and best.

You have bought tires on the strength of the tire mileage. Why not sell a range the same way? A $90 range, good for 16 years, can provide 16,000 meals. A range selling for $70 a saving of only a tenth of a cent per meal, and think of the many superior features, conveniences and comforts denied.

The foregoing remarks are made by an expert in stove making and selling. He is G. W. Noland, sales manager for the Allen Manufacturing Company. Be continually building future sales, insists Mr. Allen, and he gives some additional valuable selling hints in the following words:

Before you know a man is in the market he may have purchased his range elsewhere and if you don't advertise the particular line of ranges you are handling he may buy a line that has been brought to his attention. Therefore, to have a successful stove department there are two axioms (1) Keep lined up on prospects before they have reached the buying point. (2) Take a good line of stoves, advertise it and learn to sell it—apply salesmanship to the stove department.

In certain towns you will find the sale of a certain line of heaters, tractors, automobiles dominate in their respective fields; in another, different lines dominate. The reason may always be traced to a wide-awake advertising dealer.

It is easy to build in your customer's mind confidence in the line you are handling. Establish, before he is ready to buy, an acceptance of the value of your particular range and he will buy when he needs it. Impressions built slowly are hard to tear down.

Sell Bill a collar pad and then as you pass your stove display say: "Say, Bill, when will you need a new range? Look at this range—when you buy, this is the one I want to sell you. I sold Brown, Jones, Clark, etc., in your neighborhood, and you can ask them what they think about it."

One successful dealer's idea of building confidence in his line of stoves is decidedly ingenious and worth passing on. On a white window shade he listed the names of purchasers of the particular range he was pushing. Then when about to make a prospective sale he would

Hoosier
HOT BLAST HEATERS
AND
SOFT COAL OAKS
If You Want—
—warm floors and corners
—to save fuel
—a heater that will not smoke or explode
—a heater that will burn any kind of fuel with the best results, and hold fire over night, and at reasonable prices
--BUY A HOOSIER
HOOSIER heaters will not only reduce your coal bill, but they will also give you unequalled cold weather comfort.
Scientifically constructed, beautiful appearance.
Made in many sizes and designs.
Sold on 30 days trial and guaranteed for two years.
Sold on Convenient Terms of Payment
HOME Furniture Co.
YOUR STORE

Figure 8.—A Striking Advertisement. Well Balanced and Strongly Worded.

pull down the shade displaying a long list of names of people using the range. Usually many friends and neighbors were recognized in a small town list and this made a very forcible impression on the prospective buyer.

It is an absolute fact that after a manufacturer has spent considerable money in getting up methods and means of assisting dealers to increase their stove business it requires genuine salesmanship to give it away. I have been in hardware stores and furniture stores and have seen ranges covered up with collar pads, oil cans, chairs and what not. How can he expect to compete with an attractive cut in a mail order catalogue showing an exaggerated polished material and clean-cut, substantial appearance? Undoubtedly comparison will show that he has a better range for less money. But his customers don't know it. Your front window is advertising space really worth more to you than paid-for newspaper space. Make use of window displays featuring ranges during the usual brisk selling season. It is your business card and if you are an advertiser you know it.

Practically all stove manufacturers supply dealer-helps in many forms. It is an easy matter for the dealer to make use particularly of the direct advertising help which sends attractive literature right into the homes of customers. A prospect can thus be educated to the desirability of the range you are handling before they are in the market. That's the real gist of advertising—an introduction of the article forming an acquaintance—just as an introduction to strangers.

The live-wire dealer who has sold two carloads of washing machines has merely applied salesmanship to a special article. The same salesmanship applied to many other slow moving lines would produce excellent results.

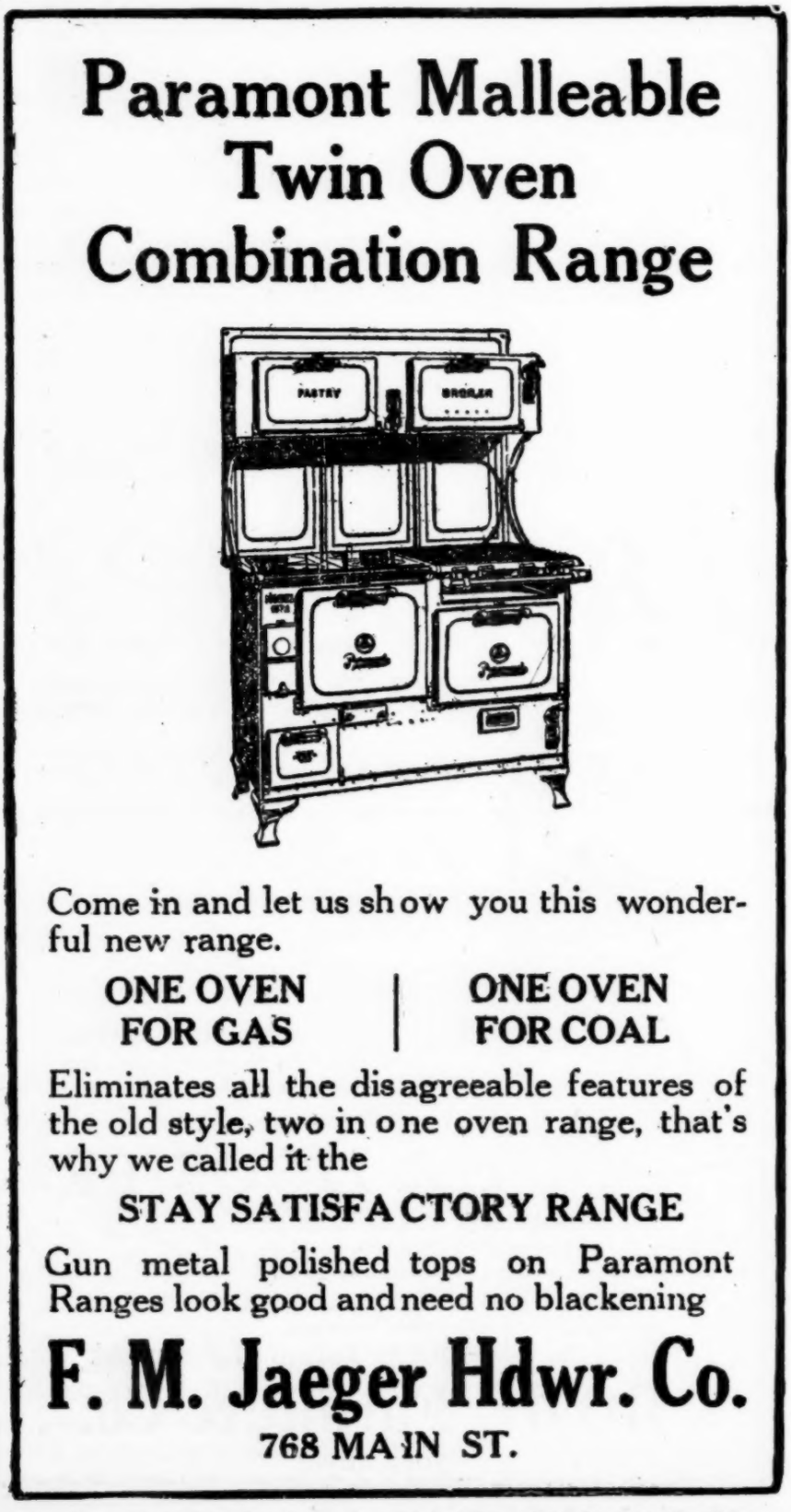

Paramont Malleable
Twin Oven
Combination Range
PASTRY
BROILER
Come in and let us show you this wonderful new range.
ONE OVEN FOR GAS
ONE OVEN FOR COAL
Eliminates all the disagreeable features of the old style, two in one oven range, that's why we called it the
STAY SATISFACTORY RANGE
Gun metal polished tops on Paramont Ranges look good and need no blackening
F. M. Jaeger Hdwr. Co.
768 MAIN ST.

Figure 9.—This Advertisement Features the Two Oven Combination Range.

Fred W. Gardner, Veteran Stove Manufacturer, Dies

Fred W. Gardner, at one time with the Michigan Stove Company, and later chairman of the board of Buck's Stove and Range Company, St. Louis, died Saturday, November 11th, after it was thought he had overcome the effects of a "third stroke." J. S. Templeton has gone to Beverly Hills, California, to look after his affairs. Incidentally, November 11th was the twelfth anniversary of the death of Mr. Buck, and also the eighth anniversary of the death of Joseph Jacobs of the Charter Oak Stove and Range Company.

Jones Knew the Value of Store Publicity but Better Still He Knew How to Get It—and Built Big Business.

This Hardware Merchant Had Novel, but Fundamental, Idea at Beginning and It Laid the Foundation of His Success.

Written Especially for AMERICAN ARTISAN AND HARDWARE RECORD by Robert Ambrose, Chicago.

HIS name wasn't Jones and he wasn't a newspaperman, but I don't mind saying the newspaper game lost a good man and the hardware trade was the gainer thereby. I'm calling him Jones, because today he is way up in the trade where he doesn't have to seek publicity and you might know his name if I called it. But where he is now isn't of interest nearly so much as how he got there.

Years ago Jones got his start in the second-hand stove business, gradually adding a few lines to his stock, until when I knew him he had acquired a full-fledged retail hardware business and was looked on as one of our leading Main street merchants. In those days I was serving a journalistic apprenticeship as "editor" of the high school paper, when I first made the acquaintanceship of Mr. Jones. He had sent for me.

"Say, Bob," he said, after we had seated ourselves in his little railed-off office in the rear of the store. "I wanted to have a little talk with you about athletics in the school. You know, since we added our line of sporting goods I have gotten mighty interested in athletics, and the way the school cleaned up in football last fall, and the way the basketball team is going now, and with the prospects of the baseball club in the spring, I wanted to let you boys know that I, as a merchant and business man, feel mighty proud of you."

"Thank you, Mr. Jones," I interrupted with appropriate regard.

"Now what I am leading up to," he continued, "is that I want to do something for the school and for you boys and for your paper, but I want to do it in secret."

Then he proceeded to unfold his plan. In the name of our school publication he wanted to donate an annual trophy cup to the athlete adjudged by the vote of the entire student body to have contributed most to the school's athletic success during the year. He specified that his name was not to appear to the offer, but suggested that the school athletic teams and the school magazine would receive favorable publicity if the cup were placed somewhere on display—and what better place than in the window display of Mr. Jones' store.

I was enthusiastic over the suggestion, and when I submitted it to the school authorities, stating that a prominent merchant and patron of the school wished to appear as the anonymous donor, they gave eager approval.

In a short time the cup arrived—a massive and impressive affair. If it had been solid silver, four feet high —which it wasn't—the results could not have been more desired. It immediately became the center of a window display, bearing the legend "Annual Dexter High School Student Athletic Trophy." It had some Greek figures and some Latin words engraved on it, which I have forgotten.

The same day it was placed on display appeared the current issue of our student publication, containing a display announcement of the cup, illustrated, and, of course, relating that it would be on display, until awarded, at the Jones Hardware Store.

Also, the same day our leading local newspaper carried a front page story of the cup, and, of course, mentioning the place it was on display.

And in Sunday's paper the sporting editor carried the story, with a cut, and with considerable enthusiastic editorial comment on the idea and on the beneficial effect of school athletics, etc., etc.—and mentioning where the cup was on display!

Thereafter, Mr. Jones' store was mentioned frequently, for good natured but heated controversy soon arose as to the meritorious selection of the individual who would first have the honor to have his name inscribed on the cup.

Of course, all the pupils visited the store, and so did many of their parents, and the cup was an interested object of view until the close of the athletic season late the following spring, when it took its place in the school trophy case.

When I returned from college to begin a real newspaper apprenticeship on the "leading" local newspaper, I found that Mr. Jones had been elected one of our school trustees, and, inexperienced as I was, there was no trouble for me to discern a connection between the public good will engendered by the trophy cup award and his election.

And as I grew to know him better, I was not surprised at his election as president of the Retail Merchants' Association, a position he held several years, nor at the tender of the mayoralty, which he reluctantly was forced to forego because of his advancing interests (he had opened stores in two nearby towns), and because of his selection as president of the State Hardware Association, where he was twice re-elected.

Now, in the beginning it will be observed that Jones knew the value of publicity—that intangible—good will—trade seeking—curiosity producing something that goes with the printed line. Actors, politicians and public figures generally long have

recognized the value and sought publicity. So it is with the firm name and the article to be merchandised.

Second, it will be noted that Jones knew how to create news. He might have got some cheap publicity by tacking his name to the donation, but it is doubtful if the plan would have been approved and it is certain its effectiveness would have been discounted as the selfish interest would have been revealed.

Jones knew this was a "story," and he knew other news. He established personal "contact" with the dozen newspapermen in our small city, and they incidentally gave him a free education in store publicity.

I remember he had a freak fire when the last customer of the night thoughtlessly dropped a lighted match in the flueless top of a cookstove on display and in which someone had carelessly left or deposited a quantity of waste. It was more smoke than fire, when the fire department and Jones arrived about the same time, a half hour later. Jones got in touch with one of "our boys" and the result was a half-column humorous yarn about the fireless cookers at Jones' store.

Again, one of his well known clerks eloped with his equally well known cashier, and Jones "tipped" off the press. He had a beautiful Maltese cat that was greatly admired by many of his customers, and that went by the name of "Tom." "Tom" disappeared. Jones was greatly attached to the animal and inserted an advertisement in the "lost" column. A few days later "Tom" was found in a rear shed, nursing several little "Toms." Now Jones may have "faked" the whole thing—he had the ingenuity to do it—but I don't think so. Anyway, he knew how to take advantage of the situation. He moved "Tom" and family and placed them in an attractive situation in one of his front windows and put up a sign which read: "And Tom Came Back." And there was another good story about Jones' store.

Also it might be noted here that Jones knew the value of a "moving" display, one exhibiting action, whether life or mechanical.

Frequently he sent in short accounts of the arrival of special merchandise, and these we were glad to make use of as readers. *Never did he try to demand a writeup on account of his regular advertising.*

As a leading figure in the business and civic life of our community he frequently was in a position to give out legitimate news items, quite apart from his business. That they helped his business was, of course, another matter as far as we were concerned, but he did not overlook it. Reports, projects, notices of meetings, his departure and arrival from out-of-town gatherings afforded many items in which his name figured.

It was in my judgment this faculty of understanding the value of publicity, and getting it without seeming to do so, that made him a success in business. Anyway, I know he has succeeded in projecting his personality into fields afar, and except that his growing business interests may now tax his advancing years, the limit has not been reached.

Old Guard Distributes Booklet to Southern Jobbers.

A handsome souvenir booklet is being mailed to the members of the Southern Hardware Jobbers' Association by Secretary-Treasurer R. P. Boyd, of the Old Guard.

The booklet shows excellent pictures of all of those who have served as presidents, together with those who are its officers at present. It also contains a complete list, with addresses, of the 97 members of this unique organization which is composed of traveling salesmen who for fifteen years or more have been selling to the southern hardware jobbers.

Of the charter members, 26 are still active in the work, while 17 of the charter members have passed on to their reward.

On the fly leaf of this interesting little book the following "dedication" is printed:

"Proud of your friendship. Grateful for your patronage. Wishing to serve you more and better. This edition is dedicated to the Southern Hardware Jobbers' Association and to the Southern Supply and Machinery Dealers' Association by the Old Guard.

So-called Reduced Prices Fail in Pulling Power.

The *Retail Merchandising Bulletin* for October points out that, regardless of the ethical merits of the arguments made by non-comparative price enthusiasts, the facts, as proved in a wide number of stores throughout the country in recent months, are that there is greater pulling power in leaving the establishment of the original value to the customer rather than for the store to advertise the amount of its reduction.

Three reasons are given for this conclusion:

(1) The public has come to realize that a store cannot possibly operate profitably (which they know it must in order to continue to exist) if much of its goods are sold at such reductions as the advertising claims.

(2) "Reductions," like anything else which is long misused, has lost its appeal with the public.

(3) The great majority of thinking people can now be appealed to more effectively and moved more definitely by claims that leave something to their own imagination.

Success Is Based Upon Adherence to True Principles.

In its broadest, as well as its narrowest sense, all business is for profit—the profit of man who busies himself at it, for the profit of nation, state, community or church, when one adopts either of them as his chief concern. And in all these various ramifications of human effort business principles apply—in everything—in education, religion, science, law, government, trade, work of every kind under the sun. Only by adherence to those principles can true success come to any man or institution.

Suggestions and Plans for Window Displays.

Instructive Examples from Exhibits in AMERICAN ARTISAN AND HARDWARE RECORD Window Display Competition.

Sells Six Motorcycles in Fishing Tackle Display.

Associating a motorcycle with a window display of articles in demand by the fisherman may seem a bit incongruous, but M. E. Klasky, who designed such a window for the Kelley-Duluth Company of Duluth, Minnesota, reports that the display not only sold a gratifying amount of fishing equipment but six motorcycles as well.

Special Motorcycle-Fishing Tackle Window Display Designed by M. E. Klasky for the Kelley-Duluth Company, Duluth, Minnesota.

A reproduction of the window is shown herewith. The figure is that of the fisherman and the assumption is that he is about to mount his gasoline steed and set out for one of the innumerable and splendid fishing spots which Minnesota affords.

In such a machine as a motorcycle, with its many attachments, its interesting and somewhat complicated machinery, there is to be found an object of interest likely to halt the passerby, whether boy or grownup. We all like to see a thing which goes, which is propelled under its own power, and the motorcycle is unique in this field.

In this explanation is likely to be found the appeal in this display, for it is not difficult for one to picture the rider, dressed for the outing and presumably with a wealth of equipment, whisked rapidly away to the chosen fishing spot.

Mr. Klasky's description of the window continues:

Fishing display: representing the fisherman with his Indian motorcycle on his way to the stream. Fishing tackle of every description displayed artistically. The back was green, with white flowers in baskets to correspond. In the background was green, wih white flowers in baskets to correspond. In the background is a scene of a sailboat on the lakes. Produced very pleasing results in the sale of tackle and six motorcycles."

Locks, Hinges, Etc., Should Harmonize with Woodwork.

In selecting hardware for the house or for pieces of home-made furniture, it is well to remember that certain finishes and styles of hardware harmonize with certain classes of woodwork. The effect of even finely designed hardware can be spoiled by using it in the wrong place.

To harmonize with light, natural finished woodwork such as cypress, maple, oak, use antique brass or copper finished bronze, what is known as statuary bronze, dark green, or black hardware. Darker woods, such as mahogany, walnut, gumwood and dark oak, look best with bronze and dull brass finishes, but they also go well with bright brass finishes. The black and dark green finishes can be used with mission or Flemish oak, but not with the red colored woods. The nickel and silver finishes should be reserved for use with white and light enamels, although brass and dull brass can also be used effectively with them. Glass knobs go well with light finishes.

Dealer Cooperation Is Necessary to Obtain Greatest Results.

Demonstrations are the most effective way to introduce and establish firmly in the minds of consumers the intrinsic value and benefit derived from the use of the particular product you want to sell. Retailers should realize the same proportionate benefit to their trade that the manufacturer does both in that community and from a National standpoint. The retailer's job is primarily to sell, and the promotion of sales should come from the manufacturer together with the dealer cooperation in the local community papers and window displays, and demonstrations. Cooperation of retailer with manufacturer in standardized articles will result in increased sales and turnover with corresponding profits.

The customer who kicks about the price of a good article, if induced to pay it, is likely to live to forget the price and consider the quality of what he has bought.

Here Is a New Form of Publicity for the Hardware Dealer.

Almost every small city newspaper or neighborhood weekly would be willing to publish as a matter of interest to its readers an article on painting such as that printed in the *Springfield Register*, Springfield, Illinois.

This article is credited to Fred P. Schlitt of Schlitt's Hardware Store. It tells how to prepare various surfaces for painting in order to get the best results.

The article is herewith reproduced with the suggestion that other hardware dealers get their local newspapers to publish it with the dealer's name.

This will prove excellent advertising for the dealer's store.

No matter how good a paint may be, it will fail unless the material upon which it is spread is in proper condition to receive it.

The choice of the material for building is influenced by considerations of cost, location, preference or style of architecture. Whatever the material, the owner wants the best possible appearance.

The time to make sure that the surface is right for good paint, which is in a large measure necessary to assure a satisfactory appearance, is before the paint is put on. The cause of the failure is rarely with the paint, but with conditions, and the more thoroughly the good paint covers a poor surface, the more likely it is to peel or give trouble.

The first essential to satisfactory finish in painting is a "receptive surface," that is one fit to receive paint. Whatever the material used, instructions always say that this means a "warm and dry surface." But other considerations are always important.

Paint failures may often be traced to the fact that painting is frequently done to hide cheap material or poor workmanship.

In order that a better understanding may be had of the nature of the various structural materials to which paint is applied and of the fact that it is almost useless to attempt to preserve and protect wood that is overcharged with moisture or sap, brick that is mildewed, tin that is covered with grease or steel that is so cold that it will shrivel up the paint, a brief statement may be made regarding the proper condition in which wood, iron and brick should be if they are to serve as firm foundations for any waterproof paint.

Wood is composed of water extractives like pitch or tannin, ligno-cellulose and mineral matter The first two of these constituents are enemies of paint and repel it. Paint made to shed water can not, therefore stick to lumber full of moisture, covered with dew or frost, nor to wood containing more or less sap or pitch. Good paint properly applied to a warm dry surface will exclude moisture, but applied to a surface having an excess of moisture it will not prevent the sun's rays from drawing or the heat within from driving the moisture outward.

No well-prepared weather resisting oil paint will stick well to such woods as hickory, poplar, basswood, Oregon fir, California redwood, Carolina poplar, yellow pine, Louisiana cypress or any other wood that is not free from sap, of uniform appearance, straight in fibre and free from large and dead knots, flaws, shakes and blemishes. It is simply inviting trouble to use good paint on lumber that is unseasoned or overcharged with moisture or sap. When such lumber must be painted, special treatment is always necessary.

Steel, Tin, Etc.—No surface of structural steel is fit to receive paint that is not dry, fairly warm and free from grease and loose scale. The general cause of the failure of coatings applied to protect steel is the same as that of the corrosion of the metal itself, namely, moist air and carbon-dioxide. The same statement may be made regarding painting on tin.

Galvanized iron or steel speedily corrodes when first exposed to the air but the film thus formed protects the zinc from further corrosion. New galvanized iron may be rendered more receptive to paint by washing with soap and water or with vinegar.

Brick is an artificial stone. Good brick may absorb 6 to 12 per cent of their weight of water in twenty-four hours. Poor brick may absorb from 15 to 25 per cent of their weight of water in twenty-four hours. Brick is affected less in its size by changes of temperature and atmospheric humidity than wood. Its surface is rougher and there is no sap or resinous matter in it. Hence paint sticks better to brick than to wood. A brick surface should be dry when it is painted.

Concrete and Cement — More time must be allowed for drying cement and concrete than for brick. Several months, in fact, should elapse before painting to allow the free lime in cement to pass by natural action into compounds harmless to paint. However, if immediate painting is desired, the concrete surface may be washed first with a strong solution of zinc sulphate in water.

Henry Hirsch, Cutlery Official, Dies Suddenly in New York City.

Henry Hirsch, 57 years old, vice president of the American Cutlery Company, with offices in Chicago and New York City, died suddenly, November 15, in the Hotel Claridge, New York City. Nonette Marx Hirsch, his wife, was with him at the time. She accompanied the body to Chicago.

This Method Made It Easy to Change to Cash System.

A retail merchant who experienced difficulty in collecting charge accounts tried a novel method of making his customers use the cash and carry system. He marked all his goods with tags showing two figures, one price mark in black for cash customers and one in red for charge and delivery customers. The red figures were on the average 10 per cent higher than the black.

This Was a Case of Too Much Precaution.

Recently a claimant in New York registered a claim on several cases of fragile articles, the contents of which arrived at destination in a very much broken up condition. The shipper declared he could not understand how the damage had occurred and his claim represented quite a sum of money. He was quite sure that the package had been all it should have been.

In fact, he had been so particular about indicating what the character of the contents was that he put "Glass" and "This Side Up" on every side of each shipment—top, bottom and all four sides. He even made an affidavit to that effect and then wondered why the carrier turned down his claim.

Coming Conventions

Western Warm Air Furnace and Supply Association, Annual Meeting, Hotel Sherman, Chicago, Illinois, December 14, 1921. John H. Hussie, Secretary, 2407 Cuming Street, Omaha, Nebraska.

Western Implement and Hardware Association, Kansas City, Missouri, January 16, 17, 18 and 19, 1923. Exhibition in Convention Hall. H. J. Hodge, Secretary, Abilene, Kansas.

Texas Hardware and Implement Association, Dallas, Texas, January 23, 24 and 25, 1923. A. M. Cox, Secretary, 822 Dallas County Bank Building, Dallas, Texas.

Mountain States Hardware and Implement Association, Denver, Colorado, January 23, 24 and 25, 1923. W. W. McCallister, Secretary-Treasurer, Boulder, Colorado.

Kentucky Hardware and Implement Association and Exhibition, Jefferson County Armory, Louisville, Kentucky, January 23, 24, 25 and 26, 1923. J. M. Stone, Secretary, Sturgis, Kentucky.

West Virginia Hardware Association Convention and Exhibition, Huntington, West Virginia, January 30 and 31, and February 1, 1923. James B. Carson, Secretary, 1001 Schwind Building, Dayton, Ohio.

South Dakota Retail Hardware Association, Sioux Falls, South Dakota, January 16, 17, 18 and 19, 1923. H. O. Roberts, Secretary, 1120 Metropolitan Life Building, Minneapolis, Minnesota.

Idaho Retail Hardware and Implement Dealers' Association, Boise, Idaho, January 31, February 1 and 2, 1923. E. E. Lucas, Secretary, Hutton Building, Spokane, Washington.

Indiana Retail Hardware Association Convention and Exhibition, Indianapolis, Indiana, January 30 and February 1 and 2, 1923. G. F. Sheely, Secretary. Argos, Indiana.

Oklahoma Hardware and Implement Association, The Auditorium, Oklahoma City, Oklahoma, January 31, February 1, 1923. W. A. Clark, Secretary-Treasurer, 209½ West Main Street, Oklahoma City, Oklahoma.

Nebraska Retail Hardware Association, Convention and Exhibition, February 6 to 9, 1923, Omaha, George H. Dietz, Secretary-Treasurer, 414 Little Building, Lincoln, Nebraska.

Michigan Retail Hardware Convention and Exhibition, Grand Rapids, February 6, 7, 8, 9, 1923. Karl S. Judson, Exhibit Manager, 248 Morris Avenue, Grand Rapids. A. J. Scott, Secretary, Marine City, Michigan.

Virginia Retail Hardware Association, Norfolk, Virginia, February 7, 8 and 9, 1923. Thomas B. Howell, Secretary, Richmond, Virginia.

Wisconsin Retail Hardware Association, Milwaukee Auditorium, Milwaukee, Wisconsin, February 7, 8 and 9, 1923. P. J. Jacobs, Secretary, Stevens Point, Wisconsin. George W. Kornley, Manager of Exhibits, 1476 Green Bay Avenue, Milwaukee, Wisconsin.

Pennsylvania and Atlantic Seaboard Hardware Association Convention and Exhibition, Philadelphia Commercial Museum, Philadelphia, Pennsylvania, February 12, 13, 14, 15 and 16, 1923. Sharon E. Jones, Secretary, 1314 Fulton Building, Pittsburgh, Pennsylvania.

Ohio Hardware Association Convention and Exhibition, Cleveland, Ohio, February 13, 14, 15 and 16, 1923. Exhibition in the new Municipal Hall. James B. Carson, Secretary, 1001 Schwind Building, Dayton, Ohio.

Illinois Retail Hardware Association Convention and Exhibition, Hotel Sherman, Chicago, Illinois, February 13, 14 and 15, 1923. L. D. Nish, Secretary-Treasurer, Elgin, Illinois.

Iowa Retail Hardware Association Convention and Exhibition, Des Moines, Iowa, February 13, 14, 15 and 16, 1923. A. R. Sale, Secretary, Mason City, Iowa.

North Dakota Retail Hardware Association, Grand Forks, North Dakota, February 14, 15 and 16, 1923. C. N. Barnes, Secretary, Grand Forks, North Dakota.

Missouri Retail Hardware Association Convention and Exhibition, Planters Hotel, St. Louis, Missouri, February 20, 21 and 22, 1923. F. X. Becherer, Secretary, 5106 North Broadway, St. Louis, Missouri.

Minnesota Retail Hardware Association, Duluth, Minnesota, February 20, 21, 22 and 23, 1923. H. O. Roberts, Secretary, 1120 Metropolitan Life Building, Minneapolis, Minnesota.

New England Hardware Dealers' Association Convention and Exhibition, Mechanics' Building, Boston, Massachusetts, February 21, 22 and 23, 1923. George A. Fiel, Secretary, 10 High Street, Boston, Massachusetts.

New York State Retail Hardware Association Convention and Exposition, Rochester, New York, February 20, 21, 22 and 23, 1923. Headquarters, Powers Hotel. Sessions and Expesition at Exposition Park. John B. Foley, Secretary, City Bank Building, Syracuse, New York.

Michigan Sheet Metal and Roofing Contractors' Association, Bay City, February 26, 27, 28 and March 1, 1923. Frank E. Ederle, Secretary 1121 Franklin Street, S. E., Grand Rapids, Michigan.

American Hardware Manufacturers' Association, Spring Convention, Windsor Hotel, Jacksonville, Florida, April 24, 25, 26 and 27, 1923. Frederick D. Mitchell, Secretary - Treasurer, 1819 Broadway, New York City.

Southern Hardware Jobbers' Association, Windsor Hotel, Jacksonville, Florida, April 24, 25, 26 and 27, 1922. John Donnan, Secretary-Treasurer, Richmond, Virginia.

Old Guard Southern Hardware Salesmen's Association, Windsor Hotel, Jacksonville, Florida, April 25, 1923. R. P. Boyd, Secretary-Treasurer, R. F. D. 4, Knoxville, Tennessee.

Hardware Association of the Carolinas, Columbia, South Carolina, May 8, 9, 10 and 11, 1923. T. W. Dixon, Secretary-Treasurer, Charlotte, North Carolina.

Arkansas Retail Hardware Association, May, 1923. (Place to be announced later.) L. P. Biggs, Secretary, 815-816 Southern Trust Building, Little Rock, Arkansas.

National Retail Hardware Association, Richmond, Virginia, June, 1923. Herbert P. Sheets, Secretary-Treasurer, Argos, Indiana.

Southeastern Retail Hardware and Implement Association, covering Tennessee, Alabama, Georgia and Florida. (Date and place to be announced later.) Walter Harlan, Secretary-Treasurer, 701 Grand Theater Building, Atlanta, Georgia.

Retail Hardware Doings

Illinois.

W. T. Beatly of Paxton has purchased the hardware store of Mrs. Hattie Baldwin at Sidell.

Indiana.

Mr. Hawk has purchased the interest of Mr. Washington in the Economy Hardware Store at Noblesville.

Iowa.

At Maurice, Andrew Vander Stoep has sold his hardware store to Charles De Groot.

John High has opened a hardware store at Bristow.

Kentucky.

The Warren County Hardware Store at Bowling Green has been remodeled.

Michigan.

The hardware store of August Schroder at Bear Lake has been completely destroyed by fire.

Minnesota.

O. A. Wittke has purchased the hardware store of Paul Rasmussen at Elmdale.

Will Stelton has purchased a hardware store at Watkins.

Missouri.

John Gench and his son Marvin are contemplating opening a hardware store at Rich Hill.

Nebraska.

H. W. Harrington has purchased the interest of his partner in the hardware firm of Harrington and Leaming at Florence.

New York.

The Call Hardware Company has been opened for business at Glens Falls.

Ohio.

At Amsterdam, Thomas Peterson has sold his hardware store to William Sweeny.

Texas.

The Wichita Hardware Company, Wichita Falls, has moved from 806-08 to 714-16 Ohio Street.

Review of Conditions in the Metal Markets.

General Situation in the Steel Industry. Report of Prices and Tendencies in Sheet Metals, Pig Iron, etc.

Recovery of Copper Features Non-Ferrous Market.

The recovery of copper, the one backward metal, featured this week's non-ferrous metals market. The industrial activity in this country was reflected in the heavy shipments of copper, which exceeded, in October, all peace time records and which have served to offset the decreased buying power resulting from financial breakdowns. Tin and zinc prices were firm. Lead was steady.

Copper.

Leading interests in the copper market have advanced their quotation for electrolytic copper to 14 cents delivered, and are not quoting beyond January 1. Some important agencies are asking 13.87½ cents, delivered. The shipment of 185,000,000 pounds in October exceeded by 15,000,000 pounds the best previous peacetime month.

Fabricators continue to take good orders and are booked an average of over two months ahead. Foundry buying of casting copper and composition ingot has been improving. Casting continues quoted at 13.40 cents, refinery. Lake copper was steady at 14.00 cents to 14.12½ cents, delivered.

Zinc.

Zinc prices advanced another 5 cents during the week, the St. Louis market closing at 7.35 to 7.40 cents, with New York 35 points higher. St. Louis zinc receipts last week were 55,750 slabs against 70,830 the week previous, while receipts since the first of the year amount to 2,386,280 slabs as compared with 1,616,110 slabs during the corresponding period of last year.

Heavy export selling of zinc, both to the continent and to Great Britain, was a feature of the week, between 12,000 and 15,000 tons being sent to the foreign markets.

Galvanizers are reported as being heavier buyers in the market. High grade zinc has been advanced to 8.25 cents delivered. One of the zinc rolling mills has advanced its base price for sheet from 9.25 cents to 9.50 cents, and another from 9.00 to 9.25 cents, f. o. b. mill.

Lead.

Independents in the New York lead market early in the week advanced their prices from 10 to 15 points to 6.90 to 6.95 cents, St. Louis, and 7.25 to 7.30 cents a pound, New York, and made sales. The leading interest, however, continues to quote 7 cents New York, and 6.80 cents, St. Louis. St. Louis lead receipts last week were 48,700 pigs, against 84,140 the previous week shipments, 35,040 pigs, against 61,400 the week before.

A decrease in consumption by the plumbing supply trade is reported, but the total consumption is sufficient to create an exceedingly strong situation throughout the market. Domestic production is gaining, but not at a rate to take care of domestic needs, without Mexican lead supplies.

Solder.

Chicago warehouses quoted solder prices as follows: Warranted, 50-50, per 100 pounds, $24.25; Commercial, 45-55, per 100 pounds, $22.75; and Plumbers', per 100 pounds, $21.50.

Tin.

Closing quotations on tin were firm, spot and nearby—37.12½ cents, futures, 37.25 cents.

Straits tin prices have ranged between 37.00 cents and 38.00 cents the past week, with sharp swings from day to day. No reasonable explanation has been advanced for the advance of nearly £25 in the London market to around £185. Later in the week the London market eased off to around £183.

The domestic tin market has fluctuated in accordance with the London market. Buying here has been moderate and principally on reactions.

Bolts and Nuts.

Chicago producers of bolts and nuts are operating their plants as nearly full as possible on the present inadequate supply of raw material. While some difficulty is experienced in obtaining steel and iron bars from mills, the situation is better and not much distress has been occasioned. Since most users contracted for their fourth quarter requirements, comparatively little current business is moving and the market is quiet with prices unchanged.

Pittsburgh makers of bolts are practically on the same basis as regards quotations although on certain grades of nuts, various prices are heard and a range of quotations likewise is available on rivets. Little or no improvement is noted in new demand although specifications on contracts for delivery in this quarter, filed early in October, are gradually being worked out. Some makers are maintaining practically full operations, the only interference being in the way of short supplies of raw material or a curtailed car supply.

From time to time new orders are placed for less-than-carload quantities, or a single carload or so at a time as needs develop here and there among consumers.

Nails and Wire.

Demand for wire fencing is being met at present and spring terms are being offered as usual to stimulate present buying for next year's requirements. Wire and nail mills continue their operation unchanged and have not been able to add to their production. With stocks practically depleted, demand for wire and nails is expected to continue

throughout the winter. Nails are steady at 2.70 cents, Pittsburgh, and plain wire at 2.45 cents at Pittsburgh.

Pittsburgh manufacturers report the demand for wire products well sustained, all of them being booked for their full tonnage for the next 60 to 90 days.

These orders consist mainly of nails in sizes from 2-penny to 16-penny, the 8-penny size continuing as the most popular. One interest reports that in October approximately 1,400 tons of nails were ordered by its customers and shipments for that month exceeded the output by 400 tons. Orders this month so far anticipate a similar record. Nail mill operations continue around 85 per cent.

Some demand for fencing is noted but generally the farmers' buying power is more limited this year, consequently specifications from jobbers for fencing, barbed wire, galvanized wire, etc., are limited everywhere.

Tin Plate.

Notwithstanding the approach of inventory time, Pittsburgh tin plate manufacturers report large tin plate users, particularly can makers, as specifying heavily this year and anxious to have as much as possible shipped before December 31.

In this a contrast is offered to conditions as they obtained a year ago when numerous specifications were issued but shipments could not commence until January 2. Stocks in hands of consumers are said to be sub-normal. In the case of the leading interest these specifications aggregate several thousand tons weekly.

The expected price announcement for the first quarter by the leading interest has not developed but it possibly may be put out this week. Neither this nor independent producers are aggressively seeking business on the present basis, for while it does not intimate whether or not an advance is coming, independents expect the inauguration of at least a $5 per ton increase, taking the price from $4.75 to $5 per base box of 100 pounds, Pittsburgh.

Sheets.

Consumers of steel in the Chicacago district find it difficult to place further orders for this material with local mills, although occasionally a carload of 100 tons can be squeezed in for December delivery. As a rule, further tonnage can be obtained only from mills in the valleys or further east. Demand keeps up and indications are for continuance through the winter. While the nominal price of blue annealed sheets continues at 2.50c, Pittsburgh, black sheets, 3.35c, Pittsburgh and galvanized 4.35c, Pittsburgh, some independent makers are seeking to hold the market at 2.60c, 3.50c and 4.50c, Pittsburgh, on these respective prices.

Old Metals.

Wholesale quotations in the Chicago district which should be considered as nominal are as follows: Old steel axles, $19.00 to $20.00; old iron axles, $25.00 to $25.50; steel springs, $20.50 to $21.00; No. 1 wrought iron, $19.00 to $19.50; No. 1 cast, $17.00 to $18.00, all per net tons. Prices for non-ferrous metals are quoted as follows, per pound: Light copper, 9 cents; light brass, 5 cents; lead 4¼ cents; sinz, 2¾ cents; and cast aluminum, 14 cents. The demand for nearly all lines is heavy.

Consumers' Hold Off In Chicago Pig Iron Market with Price for Prompt Firm at $31.

No Tonnage Booked for First Quarter Delivery as End of Year Grows Near.

CONSUMERS' lack of interest was the feature of the week in the Chicago pig iron district. With only six weeks left of the present year, no tonnage yet has been booked for first quarter delivery. Some melters are beginning to show interest in the forward market and are simply feeling out the situation. Sellers are showing restlessness because of the lack of buying. Prices are firm at $31 furnace, to Chicago users but freight frequently is absorbed on outside deliveries where competitive conditions prevail making the furnace price $30 or lower.

Makers are having no trouble in getting $31 in Chicago for prompt. Lake Superior charcoal iron continues at $36.15, delivered Chicago, with only carload sales. Silveries are dull at the lower prices recently announced. Low phosphorus iron is quiet with British metal quoted at $37, delivered Chicago district, while the domestic product is held at $43 to $44, delivered.

Pending inquiries include 300 to 500 tons of 15 per cent ferrosilicon for first quarter delivery to a Chicago user and 300 tons of foundry iron for Chicago delivery.

A recent sale calls for 300 tons of foundry iron for delivery into the first quarter. The Illinois Steel Co. is blowing in one stack at Milwaukee to fill merchant iron contracts but is not selling at present.

In the Pittsburgh market prices have declined from 50 cents to $1 per ton on various grades since a week ago. Consumers are holding off, apparently awaiting for a recession in prices.

The Pennsylvania Railroad entered the Philadelphia market for several thousand tons of foundry iron for first quarter delivery. Eastern foundry is unchanged at $29 to $30, furnace for No. 2 (1.75 to 2.75 silicon) plus $1 for silicon differentials.

Significant record, as measuring the volume of business and some of its trends, is furnished in the new figure for electrical energy product in September. The average for the month was 135,200,000 kilowatt hours a day; and this tops a previous high record of 131,000,000 for August, and contrasts with not much over 120,000,000 in the early months of the year.

Current Hardware and Metal Prices.

AMERICAN ARTISAN AND HARDWARE RECORD is the only publication containing Western Hardware and Metal prices corrected weekly.

METALS

PIG IRON.

Chicago Foundry..	31 00
Southern Fdy. No. 2	31 01 to 33 01
Lake Sup. Charcoal	36 15
Malleable	31 00

FIRST QUALITY BRIGHT TIN PLATES.

		Per Box
IC	14x20 112 sheets	$10 00
IX	14x20.....	11 25
IXX	14x20.....	12 60
IXXX	14x20.....	13 90
IXXXX	14x20.....	15 25
IC	20x28.....	20 00
IX	20x28.....	22 50
IXX	20x28.....	25 20
IXXX	20x28.....	27 80
IXXXX	20x28.....	30 50

COKE PLATES.

Cokes, 180 lbs...	20x28	$11 80
Cokes, 200 lbs...	20x28	12 00
Cokes, 214 lbs...IC	20x28	12 35
Cokes, 270 lbs...IX	20x28	14 10

BLUE ANNEALED SHEETS.

Base .....per 100 lbs. $4 00

ONE PASS COLD ROLLED BLACK.

No. 18-20.....per 100 lbs.	$4 65
No. 22-24.....per 100 lbs.	4 70
No. 26.....per 100 lbs.	4 75
No. 27.....per 100 lbs.	4 80
No. 28.....per 100 lbs.	4 85
No. 29.....per 100 lbs.	4 95

GALVANIZED.

No. 16.....per 100 lbs.	$5 10
No. 18-20.....per 100 lbs.	5 25
No. 22-24.....per 100 lbs.	5 40
No. 26.....per 100 lbs.	5 55
No. 27.....per 100 lbs.	5 70
No. 28.....per 100 lbs.	5 85
No. 30.....per 100 lbs.	6 35

BAR SOLDER.

Warranted.
50-50 .....per 100 lbs. $24 25

Commercial
45-55 .....per 100 lbs. 22 75
Plumbers ....per 100 lbs. 21 50

ZINC.

In Slabs 8 25

SHEET ZINC.

Cask lots, stock.....10¼c
Less than cask lots.....10¾c

COPPER.

Copper Sheets, base.....21¼c

LEAD.

American Pig .....$ 7 90
Bar 8 65

Sheet.
Full coils ....per 100 lbs. 9 80
Cut coils .....per 100 lbs. 10 05

TIN.

Pig Tin .....per lb. 41c
Bar Tin 43½c

HARDWARE, SHEET METAL SUPPLIES, WARM AIR HEATER FITTINGS AND ACCESSORIES.

ADZES.

Coopers'.
Barton's .....Net
White's .....Net

AMMUNITION.

Shells, Loaded, Peters.
Loaded with Black Powder 18%
Loaded with Smokeless Powder 18%
Winchester.
Smokeless Repeater Grade .....20 & 4%
Smokeless Leader Grade .....20 & 4%
Black Powder .....20 & 4%
U. M. C.
Nitro Club .....20 & 4%
Arrow .....20 & 4%
New Club .....20 & 4%
Gun Wads—per 1000.
Winchester 7- 8 gauge 10&7½%
" 9-10 gauge 10&7½%
" 11-28 gauge 10&7½%

ASBESTOS.

Paper up to 1/16.....6c per lb.
Rollboard .....6¼c per lb.
Millboard 3/32 to ½....6c per lb.
Corrugated Paper (250 sq. ft. to roll)....$6.00 per roll

AUGERS.

Boring Machine.....40&10%
Carpenter's Nut 50%
Hollow.
Bonney's.....per doz. $30 00
Post Hole.
Iwan's Post Hole and Well 35%
Vaughan's, 4 to 9 in.....$15 60

AWLS.

Brad.
No. 3 Handled..per doz. $0 65
No. 1050 Handled " 1 40
Patent asst'd, 1 to 4 " 35
Harness.
Common .....per doz. $1 05
Patent ..... " 1 00
Peg.
Shouldered ..... " 1 60
Patented ..... " 75
Scratch.
No. IS. Socket Handled .....per doz. $2 50
No. 344 Goodell-Pratt, list less.....35-40%
No. 7 Stanley.....per doz. $2 25

AXES.

First Quality, Single Bitted (unhandled), 3 to 4 lb., per doz.....$12 00
Good Quality, Single Bitted, same weight, per doz. 11 00

BALANCES, SPRING.

Universal.
Sight Spring.....List less 25%
Straight .....List less 25%

BARS, CROW.

Steel, 4 ft., 10 lb.....$ 40
Steel, 5 ft., 18 lb..... 1 40
Pinch bars, 5½ ft., 24 lb..... 1 60

BARS, WRECKING.

V. & B. No. 12.....$0 34
V. & B. No. 24..... 0 43
V. & B. No. 324..... 0 57
V. & B. No. 30..... 0 48
V. & B. No. 330..... 0 63

BEVEL, TEE.

Stanley's Rosewood handle, new list .....Nets
Stanley iron handle.....Nets

BINDING CLOTH.

Zinc 55%
Brass 40%
Brass, plated 60%

BITS.

All Vaughan and Bushnell.

Screw Driver, No. 30, each	$ 27
Screw Driver, No. 1, each	16
Reamer, No. 80, each...	41
Reamer, No. 100, each...	41
Countersink, No. 13, each..	20
Countersink, Nos.14-15 each	27

BLADES, SAW.

Wood.
Atkins 30-in.

Nos.	6	40	26
	$8 90	$9 45	$5 40

BLOCKS.

Wooden 45%
Patent 45%

BLOW TORCHES (See Firepots).

BOARDS.

Stove.	Per Doz.
26x26, wood lined.....	$14 45
28x28, " "	16 95
30x30, " "	19 00
26x26, paper lined.....	8 15
28x28, " "	9 10
30x30, " "	10 80

Wash.
No. 760, Banner Globe (single) .....per doz. $5 25
No. 652, Banner Globe (single) .....per doz. 6 75
No. 801, Brass King, per doz. 8 25
No. 860, Single—Plain Pump 6 25

BOLTS.

Carriage, Machine, etc.
Carriage, cut thread, ⅜x6 and sizes smaller and shorter 50%
Carriage sizes, larger and longer than ⅜x6.....40-5%
Machine, ⅜x4 and sizes smaller and shorter.....50%
Machine, sizes larger and longer than ⅜x4.....75%
Stove 75-10%
Mortise, Door.
Gem, iron 5%
Gem, bronze plated.....5%
Barrel.
Cast .....Net
Wrought ..... "
Wrought, bronzed ..... "
Flush.
Wrought .....Net
Spring.
Wrought ..... "
Wrought, heavy ..... "
Square.
Wrought ..... "

BOXES.

Mail. No...	2	4	10
Per doz..	$18 00	$23 00	$29 00

Cast Iron.
Per doz. $9 50
Mitre.
Stanley's .....Net Prices
Stearns, No. 2..per doz. $48 00

BRACES, RATCHET.

V. & B. No. 444 8 in.....$4 54
V. & B. No. 222 8 in..... 3 89
V. & B. No. 111 8 in..... 3 55
V. & B. No. 11 8 in..... 3 02

BURRS, RIVETING.

Copper Burrs only.....40-5%
Tinners' Iron Burrs only.....Net

BUTTS.

Steel, antique copper or dull brass finish—case lots—3½x3½...per dozen pairs $3 00
4x4 .... " " " 4 20
Heavy Bevel steel inside sets, case lots—.....per dozen sets 7 20
Steel bit keyed front door sets, each 1 80
Wrought brass bit keyed front door sets, each..... 3 30
Cylinder front door sets, each 7 50

CALIPERS.

Double .....Net
Inside and Outside..... "
Wing ..... "

CARRIERS.

Hay.
Diamond, Regular...each, net
Diamond, Sling..... " "

CASTERS.

Standard—Ball Bearing, ...50 & 10%
Bed 40%
Common Plate.
Brass Wheel 15%
Iron and porcelain wheels, new list 50%
Philadelphia Plate, new list 50%
Martin's 40%

CATCHERS, GRASS.

No. 160S.....per doz. $12 25
No. 165S..... " " 14 01

CEMENT, FURNACE.

American Seal, 5 lb. cans, net $ 45
" " 10 lb. cans, " 90
" " 25 lb. cans, " 2 00
Asbestos, 5 lb. cans " 45
Pecora.....per 100 lbs. 7 51

CHAINS.

Proof Coil, ⅜" 100 lbs.....$ 8 50
Weldless Coil, ...50-5%
Electric Cow Welded Ties, No. 00, 4½, per doz..... 2 85

CHALK, CARPENTERS'.

Blue .....per	gro.	$2 00
Red	" "	2 00
White	" "	1 80
Common White School Crayon...	" "	0 30

CHIMNEY TOPS.

Iwan's Complete Rev. & Vent. 30%
Iwan's Iron Mountings only..35%

CHECK, DOOR.

Corbin .....Net list
Russwin .....Net list

CHISELS.

Cold.
V. & B. No. 25, ¼ in., each $0 26
V. & B. No. 25, ⅝ in., each 41
Diamond Point.
V. & B. No. 55, ¼ in..... 0 31
V. & B. No. 55, ½ in..... 0 48
Firmer Bevelled.
Round Nose.
V. & B. No. 65, ¼ in..... 0 29
V. & B. No. 65, ½ in..... 0 40
Socket Firmer.
Cape.
V. & B. No. 50, ⅜ in..... 0 31
V. & B. No. 50, ¾ in..... 0 57

CHUCKS, DRILL.

Goodell's, for Goodell's Screw Drivers.....List less 35-40%
Yankee, for Yankee Screw Drivers $6 00

CLAMPS.

Adjustable.
Martin's 30%
No. 63, Screw.....20%
Cabinet.
Screw 20%
Carpenters'.
Steel Bar..List price plus 20%
Carriage Makers'.
2½-inch.....per doz. $ 7 00
5 - " ..... " 14 00
8 - " ..... " 28 00
12 - " ..... " 42 00
Hose.
Sherman's brass, ¾-inch per doz. $0 48
Double, brass, ¾-inch, per doz. 1 20
Saw Filers.
Wentworth's, No. 1, $12.50; No. 2, $18.25; No. 3, $16.25.

CLAWS, TACK.

Wood hdl. No. 10.per doz. $1 15
Forged steel, wood hdl. " 2 15
Solid steel ..... " 3 25
Giant ..... " 50

CLEVISES.

Malleable .....10c lb.

CLIPPERS.

Bolt (Carolus).
No. 0.....$2 50
No. 1..... 3 25
No. 3..... 4 25

CLIPS.

Axle ..... 65 & 5%
Damper.
Acme, with tail pieces, per doz. $1 25
Non Rivet tail pieces, per doz. 25
Non Rivet Clips..... 90
Hame 50

COLLARS, STOVE PIPE.

Lacquered.

Inches	5	6	7
Fancy pattern, per doz.	.....65c	75c	$4 00

COMPASSES.

Carpenters' 15%

COPPERS—Soldering.

Pointed Roofing.

3 lb. and heavier....per lb.	40c
2½ lb..... "	45c
2 lb..... "	48c
1½ lb..... "	55c
1 lb..... "	60c

CORD.

No. 7 Std. per doz. hanks..$ 9 40
No. 8 " " " " 10 85

This is what is causing so many building owners to insist on

COPPER

A GALVANIZED IRON ELBOW

erected in October, 1921, on the home of D. H. McGrayne, Rutherford, N. J., and taken down in September, 1922, because of condition shown in photograph. Nearly consumed by rust in a few months.

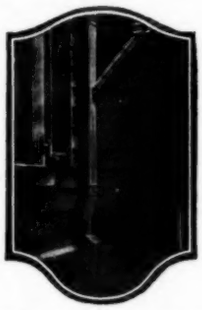
ACCOMPANYING photograph shows what remains of a galvanized iron elbow after less than a year's service on a house in a New Jersey town.

It was received by the Copper and Brass Research Association in an egg carton marked "Fragile!"

For you to send to your prospects we have printed a booklet, "Copper, the Ideal Roof," and a small folder, "Metal Mileage," which points out the economy of Copper for leaders, gutters, etc. Write for the number of copies you need. No charge.

We also have a plan that will bring the full local results of our National advertising into *your* shop—make you the *good-job specialist* in your community.

Use the time-saving coupon



COPPER LEADER

75 years in service and still in good condition.

COPPER & BRASS RESEARCH ASSOCIATION

25 Broadway - New York

Tear off and mail

COPPER & BRASS RESEARCH ASSOCIATION, 25 BROADWAY, NEW YORK

Send me without charge

_____ (How many) copies of "Copper, the Ideal Roof."

_____ (How many) copies of "Copper Roofing," containing information for roofing contractors.

_____ (How many) copies of "Metal Mileage"—with my firm name imprinted, as shown below.

_____ ("Yes" or "No") Your letter describing ready-to-use local advertising campaign.

NAME_____

ADDRESS_____

COTTERS, SPRING.

All sizes 87½%

COUPLINGS, HOSE.

Brass.....per doz. $2 25

CUT-OFFS.

Standard gauge.....35%
26 gauge.....20%
Kuehn's Korrekt Kutoffs:
Galv., plain, round or cor. rd.
Standard gauge 40%
26 gauge 10%

DAMPERS, STOVE PIPE.

Diamond.
6-inch.....per doz. $1 50

DIGGERS.

Post Hole.
Iwan's Split Handle (Eureka)
4-ft. Handle...per doz. $14 00
7-ft. Handle...per doz. 36 00
Iwan's Hercules pattern, per doz. 14 90

DRILLS.

V. & B. Star, 12-inch Length.
¼, 5/16 and ⅜, each.....$ 25
⅝, each 36
1, each 54
1¼, each 81

V. & B. Star, 18-inch Length.
5/16 and ⅜, each.....$ 33
⅝, each 45
1, each 69
1¼, each 1 05

EAVES TROUGH.

79% of Standard List.
Milcor .....
Galv. Crimpedge, crated.....75%

ELBOWS—Conductor Pipe.

Galvanized Steel, Tin and Terne
Plain Round or Round Corrugated
2 to 6 inch, Std. gauge ..65%
2 to 6 inch, 26 gauge 45%
2 to 6 inch, 24 gauge 20%

Milcor .....
Galv., plain or corrugated, round flat.
Crimp. Std. gauge.....65%
26 Gauge Std. gauge.....45%
24 Gauge Std. gauge.....15%

Square Corrugated.
Standard gauge 50%
26 gauge 30%
Milcor .....
Standard gauge 50%
26 gauge 35%

Portico Elbows.
Standard Gauge Conductor Pipe, plain or corrugated.
Not nested .....70 & 5%
Nested solid.....70 & 5%

ELBOWS—Stove Pipe.

1-piece Corrugated. Uniform.

	Doz.
5-inch	$1 38
6-inch	1 54
7-inch	1 98

Special Corrugated.

	Doz.
6-inch	$1 27
7-inch	1 76

Uniform, Collar Adjustable.

	Doz.
5-inch	$1 76
6-inch	1 98
7-inch	2 48

WOOD FACES—50% off list.

FENCING.

Lawn fence, single space, 36-inch .....$ 9 12
Lawn fence, single space, 42-inch 10 20
Lawn fence, double space, 32-inch 12 50
Lawn fence, double space, 42-inch 13 75
Field fence, 26-inch, No. 10 top and bottom 12 filling 26 50
Same, 6 filling..... 33 82
Field fence, 32-inch, No. 10 top and bottom 12 filling 30 34
Same, 6 filling..... 39 41

FILES AND RASPS.

Heller's (American).....65-5%
American 65-5%
Arcade .....60 & 10%
Black Diamond 50-5%
Eagle 60-10%
Great Western .....60 & 10%
Kearney & Foot.....60 & 10%
McClellan .....60 & 10%
Nicholson 50-10%
Simonds 60%
J. Barton Smith.....50-10-5%
X F .....Net list

FIRE POTS.

Clayton & Lambert's.
East of west boundary line of Province of Manitoba, Canada, No. Dakota, So. Dakota, Nebraska, Kansas, Oklahoma, Amarillo, San Angelo and Laredo, Texas 55%
West of above boundary line.52%

Turner Brass Works.

	Ea.
No. 43 Kerosene-Gasolene Master Torch, 1 qt.....	$5 40
No. 48 Kerosene-Gasolene Master Torch, 1 qt.....	6 73
No. 95 Double Jet Torch, Gasolene, 1 qt.....	6 95
No. 30 Kerosene-Gasolene Torch, 1 qt. (new line)..	6 48
No. 33 Single Jet Gasolene Torch, 1 qt.....	6 93
No. 53 Plbrs. Furn. Galv. Iron Tank with Bulb, 7 pts.	6 75
No. 63 Plbrs. Furn. Galv. Iron Tank with Pump, 7 pts.	7 47
No. 56 Plbrs. Furn. Straight Side Steel Tank with Bulb, 7 pts.....	8 82
No. 66 Plbrs. Furn. Straight Side Steel Tank, with Pump, 7 pts.....	9 54

Otto Bernz Co.

No. 1 Furn. Gasolene with large shield, 1 gal.....$	6 75
No. B Furn. Kerosene, 1 gal.	15 12
No. 10 Brazier, Kerosene or Gasolene, 10 gals...	47 52
No. 5 Torch, Gasolene or Kerosene, 1 pt.....	7 92
No. 83 Torch, Gasolene, 1 quart	5 40
No. 86 Torch, Gasolene, 1 pt.	4 05

GALVANIZED WARE.

	Per doz.
Pails (Competition), 8-qt...	$2 00
10-qt.	2 15
12-qt.	2 40
14-qt.	2 65
Wash tubs, No. 1.....	6 25
No. 2	7 25
No. 3	8 25

GARAGE DOOR HARDWARE.

Stanley .....All net

GAUGES.

Marking, Mortise, etc.....Nets
Wire.
Disston's 25%

GIMLETS.

Discount.....65% and 10%

GLASS.

Single Strength, A. and B. all sizes.....83 & 84%
Double Strength, A, all sizes 79%
Double Strength, B, all sizes, 85%

GLUE.

Bulk.
B Amber .....per lb. 35c
A White ..... " 40c
H. S. Amber..... " 32c
Liquid.
Army & Navy.....40%
Le Page's—
List "A" 37½%
List "B" .....35 %
List "C" .....25 %

GREASE, AXLE.

Wood Boxes.
Frazer's .....per gro. 13 00
Hub Lightning 7 50
Wood Pails.
Frazer's, 15 lb., $1.00; 25 lb., $1.50 each.
Hub Lightning, 15 lb., 90c; 25 lb., $1.21 each.

HAFTS, AWL.

Brad.
Common .....per doz. $0 35
Peg.
Patent, plain top. " 60
Patent, leather top " 80
Sewing.
Common ..... " 24
Patent ..... " 55

HAMMERS, HANDLED.

	Each, net
All V. and B.	
Blacksmiths' Hand, No. 0 26-oz.	$1 00
Engineers' No. 1, 26-oz....	1 00
Farriers', No. 7, 7-oz.....	93
Machinists', No. 1, 7-oz....	78
Nail.	
Vanadium, No. 41, 20-oz., each	1 45
Vanadium, No. 41½, 16-oz., each	1 45
V. & B., No. 11½, 16-oz., each	1 04
Garden City, No. 111½, 16-oz., each	87
Tinner's Riveting, No. 1, 8-oz., each	82
Shoe, Steel, No. 1, 13-oz., each	65
Tack.	
Magnetic.	
No. 5, 4-oz., each.....	72

HAMMERS, HEAVY.

Farrier's 20%
Mason's.
Single and Double Face....50%

HANDLES.

Agricultural Tool.
4½-inch, plain...per doz. $3 50
Auger.
Common Assorted, per doz. $0 75
Pratt's Adjustable, Nos. 1 & 2, per doz..... 6 00
Ives' Adjustable, per set.. 1 35
Axe.
Hickory, No. 1....per doz. 3 00
Hickory, No. 2.. " 2 00
1st quality, second growth 6 00
Special white, 2nd growth 4 50
Chisel.
Hickory, Tanged, Firmer Assorted .....per doz. 55c
Hickory, Socket Firmer, Assorted .....per doz. 70c
Coal Pick 40%
Drifting Pick 40%
File, assorted.....per doz. 30c
Hammer and Hatchet.
No. 1 per doz.....$0 90
Second growth hickory, per doz. 1 40
Hay and Manure Fork, Handles, Strap and Ferrule ..... per doz. $7 00
Screw Driver.
Assorted .....each 6c
Shovel and Spade.....Net

HANGERS.

Conductor Pipe.
Milcor Perfection Wire.....25%
Faves Trough.
Steel hangers 30%
Triple Twist wire.....10%
Milcor Eclipse Wire.....15%
Milcor Triplex Wire.....10%
Milcor Milwaukee Extension..10%
Milcor Steel (galv. after forming) List plus 12½%
Milcor Seiflock E. T. Wire, List plus 40%

HASPS.

Hinge, Wrought, with staples.Net

HATCHETS.

V. and B. Supersteel.	Each
Broad, No. 1, 24-oz.....$	1 43
Broad, No. 3, 32-oz.....	1 78
Half, No. 1, 15-oz.....	1 25
Half, No. 3, 27-oz.....	1 37
Claw, No. 1, 19-oz.....	1 31
Claw, No. 2, 25-oz.....	1 37
Flooring, No. 1, 20-oz.....	1 43
Flooring, No. 2, 24-oz.....	1 60
Shingling, No. 1, 17-oz.....	1 20
Shingling, No. 2, 23-oz.....	1 25
Lathing, No. 1, 14-oz.....	1 20
Lathing, No. 2, 17-oz.....	1 25
Vanadium Steel.	
Half, No. 62, 22-oz.....$	1 82
Underhill Pattern Lathing, 9 row, 19-oz.....	2 29

HINGES.

Heavy Strap, in Bundles.

4 inch, doz. prs.....$	0 93
5 " " "	1 12
6 " " "	1 54
8 " " "	2 55

Extra Heavy T in Bundles.

4-inch, doz. prs.....$	1 41
5 " " "	1 50
6 " " "	1 85
8 " " "	3 20

HOES.

Garden .....Net

HOOKS.

Box.
V. and B. No. 9, each....$0 26
Conductor.
Conductor hooks 20-10%
Milcor .....
"Direct Drive" Wrought Iron for wood or brick..15%
Cotton.
V. and B. No. 8, each.... 24
Hay.
V. and B. No. 1, each.... 26
Bar Meat.
V. and B. No. 26, ⅜", each 09
V. and B. No. 28, ½", each 16
Screw Meat.
V. and B. No. 2, per gro.. 6 50
Butchers' "S."
V. and B. No. 6, each..... 08
V. and B. No. 8. each..... 11

HOSE.

	Per Ft.
⅝-in. 2 ply molded..	9½c to 12¾c
⅝-in. cord	8½c to 10c
¾-in. wrapped	9½c to 13½c

IRONS.

Sad.
Charcoal .....per doz. 11 00
Common, polished, per 100 lbs. 7 75
No. 70 Asbestos.....$1 50 net
No. 100 " ..... 1 75 net
Common, nickel plated 8 25
Mrs. Potts.'
No. 50 J. Enterprise, per set Nets
No. 55 J, " " "
No. 50 T, " " "
No. 55 T, " " "

JACKS.

Wagon.
Richard's No. 1 per doz. $15 50
Oliver,
Each $0 60 $0 80
Nos. 0 00
Standard,
Each $0 60 $1 00
Nos. 1 2
Big Lift 40%
Tiger 40%

KNIVES.

Beet Topping.
Clyde, 9-in. Scimitar Blade, doz. 25%
California 25%
Butcher.
Beechwood Handles, 6-inch blade 25%
Beechwood Handles, 7-inch blade 25%
Beechwood Handles, 3-inch blade 25%
Cooper's Hoop 25%
Drawing.
Standard 25%
Adjustable 25%
Barton's Carpenters' 25%
Hay.
Iwan's Solid Socket.....25%
Heath's 25%
Iwan's Sickle Edge.....25%
Iwan's Imp'd Serrated....25%
Hedge.
Challenge 25%
Disston's No. 1.....25%
Putty.
Common 25%
Lander's 25%
Scraping.
Beech Handle 25%
Lander's 25%

KNOBS.

Door.
Mineral .....per doz. $2 00
Porcelain ..... " 2 00
Jet ..... " 2 00

LADDERS.

Step.
Common, per ft.....28c
Common, with Shelf, add 10c
IXL 34c
Challenge, 6 to 9 ft.....55c
10 to 16 ft.....60c

LANTERNS.

	Per doz.
Monarch tin, hot blast.....$	8 25
Dietz No. 2, cold blast.....	13 00
Best tubular	8 25
Competition lanterns No. 0 tubular	6 90

LEATHER BELTING.

From No. 1 Oak Tanned Butts.
Extra heavy, 18-oz.....35%
Heavy, 16-oz.....40%
Medium, 14½-oz.....40%
Light, 13-oz.....50%

LEATHER LACING.

Cut, strictly No. 1.....45%

LEVELS.

Disston, No. 28 Asst.....$	22 05
" No. 18, 20 in., each	1 83
" No. 22, 24 in., each	2 40
" Shafting, 6 in.....	19 80
" " 6 in. gr. glass	24 20
" No. 1 Asst.....	5 75
" No. 2 Asst.....	12 40
" 24-26 in., each....	1 02
" 28-30 in., each....	1 00

LIFTERS.

Stove Cover.
Coppered .....per gro. $6 00
Alaska ..... " 4 75
Transom.
Payson's 55%

LOCKS.

Barn Door.
No. 60 Stearns..per doz. $12 00
No. 80 " " 24 00

MALLETS.

Carpenters'.
Fibre Head, No. 2, per doz. $16 50
" No. 3, " 19 50
" No. 4, " 28 50
Round Hickory .....per doz $3 00— 5 00
Tinners'.
Hickory .....per doz. $2 25